

## Spiders from Laos: New species and new records (Arachnida: Araneae).

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**Abstract** — Spiders from Laos collected on expeditions from 2003 to 2008 are investigated. Currently, 89 spider species are recorded from Laos. Records of 51 species are included in the present paper. Four species are described for the first time: *Argiope dang* sp. n. (male, female) from Vang Vieng, *Pseudopoda wang* sp. n. (male, female) from Nam Khan valley, *Olios muang* sp. n. (male) from Ban Thathot, and *Theleticopsis folia* sp. n. (female) from Nam Khan valley. Sixteen species are recorded from Laos for the first time: *Acusilas malaccensis* Murphy & Murphy 1983, *Agelena limbata* Thorell 1897, *Anepion maritatum* (O. Pickard-Cambridge 1877), *Arachnura melanura* Simon 1867, *Araneus ellipticus* (Tikader & Bal 1981), *Argiope pulchella* Thorell 1881, *Eriovixia pseudocentrodes* (Bösenberg & Strand 1906), *Hersilia flagellifera* Baehr & Baehr 1993, *Menemerus bivittatus* (Dufour 1831), *Myrmarachne turriformis* Badcock 1918, *Oxyopes birmanicus* Thorell 1887, *Portia assamensis* Wanless 1978, *Tetragnatha ceylonica* O. Pickard-Cambridge 1869, *Tetragnatha lauta* Yaginuma 1959, *Tylorida striata* (Thorell 1877), *Tylorida ventralis* (Thorell 1877). New observations on the biology of *Eurychoera banna* Zhang, Zhu & Song 2004 are documented. *E. quadrimaculata* Thorell 1897 is firstly recorded from Brunei. The following species are transferred from the genus *Zygiella* (Araneidae) to the genus *Guizygiella* (Tetragnathidae): *Guizygiella indica* (Tikader & Bal 1980) comb. nov., *Guizygiella shivui* (Patel & Reddy 1990) comb. nov. Illustrations are given for *Argiope pulchella*, *A. ?versicolor*, *Eriovixia pseudocentrodes*, *Laoponia saetosa* Platnick & Jäger 2008, *Orsinome vethi* (Hasselt 1882), *Oxyopes birmanicus*, *Tylorida ventralis*, mostly showing intraspecific variation. A map of Laotian collecting localities is given. *Orsinome vethi* is recorded for Flores the first time, the record represents the eastern most distribution of this species.

**Key words** — taxonomy, transfers, biodiversity, spiders, Indochina, Luang Prabang Province, Khammouan Province, Luang Nam Tha Province, Houaphan Province, Vientiane Province

### Introduction

The present paper is the second in a series dealing with spiders from Laos. The spider fauna of this country is still poorly investigated. Up to now, 58 species of spiders were known from Laos (Jäger 2007). In contrast, the fauna of Vietnam, Thailand and Myanmar is far better known. Pham Dinh et al. (2007), e.g., published a list of Vietnamese spiders including 320 species from collections as well as from literature records.

Since the first paper on spiders from Laos (Jäger 2007) two more expeditions were conducted by the author. Additional material was obtained from cave surveys, collected by Helmut Steiner. Material other than spiders was sent to specialists. Identified material (with locality numbers according to list in “Material and methods”) belonged to Scorpionidae (*Heterometrus laoticus* Couzijn, 1981, L24, Lourenço det. 2007, SMF 57138), Buthidae (*Lychas mucronatus* (Fabricius, 1798), L29, L34, Lourenço det. 2007, SMF 57128–57129), Scutigeridae (*Thereuopoda longicornis* (Fabricius 1793), L3, L7, L18, L28–L30, L35,

L44–L47, L50, L53, L55–L56, L66–L67, L72–L78 (Würmli & Stoev det.), Thysanoptera (*Dinothrips spinosus* (Schmutz), L26, SMF T 18537; *Elaphothrips curvipes* Priesner, L26, SMF T 18538; *Meiothrips menoni* Ananthakrishnan, L7; Okajima & zur Strassen det.), Archaeognatha (Machilidae; Deharveng det.), and Collembola (most of the material belonged to Entomobryoidea: Entomobryidae, Paronellidae, Isotomidae; few specimens to Symphypleona: Sminthuridae, Sminthurididae; Deharveng det.). Further taxa are listed under *Eurychoera banna* Zhang, Zhu & Song 2004 as web commensals.

The present paper contribute to the knowledge of the Laotian spider fauna. Several new records for Laos and four new species could be identified. Currently 89 spider species are known from Laos.

### Material and methods

Material was examined and is preserved in 70% ethanol. Epigyna and internal duct systems were partly treated with 96% lactic acid. Descriptions are mainly according to those

in Jäger (2008). Leg measurements are given as: total length (femur, patella, tibia, metatarsus, tarsus). All measurements are in millimetres. Arising points of tegular appendages in males are described as clock-positions of the left pedipalpus. As in Sparassidae (Jäger 2005: 88), slit sense organs close to the epigynum are illustrated if present as at least descriptive character. In the schematic course of female internal duct systems a circle represents the copulatory orifice, a "T"-shaped part stands for glandular pores ("turning point") and an arrow is referring to the fertilisation duct pointing in direction of the uterus externus.

Deposition of material: If not stated otherwise material is deposited in the Research Institute Senckenberg, Frankfurt am Main, Germany (SMF) and can be traced in the collection database SeSam (online at <http://sesam.senckenberg.de>). MHNG — Muséum d'Histoire Naturelle, Geneva, Switzerland. NHM — Natural History Museum, London, United Kingdom. NHMW — Naturhistorisches Museum Wien, Austria. ZMB — Zoological Museum Berlin, Germany.

Publications used for identification are cited in the text. If not stated otherwise material was determined by the author. Material is sorted in the material lists by provinces and from North to South and from West to East.

Abbreviations used in the text: AME — anterior median eyes, ALE — anterior lateral eyes, AW — anterior width of dorsal shield of prosoma, OL — length of opisthosoma, OW — width of opisthosoma, PJ — subsequent number of Sparassidae, examined by Peter Jäger, PME — posterior median eyes, PL — length of dorsal shield of prosoma, PLE — posterior lateral eyes, PW — width of dorsal shield of prosoma, SD — subsequent number of Sparassidae with tissue sample for DNA-analysis, I, II, III, IV — leg I, leg II, etc.

#### Localities (Fig. 1–6)

Laotian localities where spiders were collected are listed here from North to South and from West to East in order of the particular provinces (L1–36, grey in Fig. 1, with details listed in Jäger 2007; numbers L37–L78, black in Fig. 1, with details listed below, starting again in the North and going southwards. All localities of expeditions of P. Jäger in 2007 and 2008 are included, as well as records from Helmut Steiner, when species could be identified. L-numbers are referred to in the "material examined" section of each species. Names of villages, streams and cliffs are partly according to the geographical maps of the "Service Géographique d'Etat" (1:100000).

Lao terms: Ban=village, Houay=stream, Nam=river, Pha=cliff, Phou=hill, Tham=cave

#### Luang Nam Tha Province

##### Luang Nam Tha

L37 Nam Ha Protected Area (5), E of Ban Kaythohan, 18 air km NNW of Luang Nam Tha, N 21°9'7.20", E 101°19'7.90", 848 m altitude, primary and secondary

forest, narrow valley with stream to Nam Luang, by day, sieving leaf litter, P. Jäger leg. 7.III.2008.

L38 Nam Ha Protected Area (4), S of Ban Namluang, 16 air km NNW of Luang Nam Tha, N 21°8'48.90", E 101°21'19.00", 770 m altitude, Nam Luang, water-duct under street, by day, by hand, P. Jäger leg. 6.III.2008.

L39 Nam Ha Protected Area (3), N of Ban Kouthahan, 15 air km NNW of Luang Nam Tha, N 21°8'17.60", E 101°21'7.30", 746 m altitude, Nam Luang, water-duct under street, by day, by hand, P. Jäger leg. 6.III.2008.

L40 Nam Ha Protected Area (2), 13 air km NNW of Luang Nam Tha, N 21°6'43.00", E 101°20'36.10", 693 m altitude, water-duct under street, by day, by hand, P. Jäger leg. 6.III.2008.

L41 Nam Ha Protected Area (6), Ban Hongluay, 6 air km N of Luang Nam Tha, N 21°3'32.10", E 101°24'3.00", 589 m altitude, vegetation close to stream, water-duct under street, by day, by hand, P. Jäger leg. 7.III.2008.

L42 Nam Ha Protected Area (7), N of Ban Hatgnao, 3 air km N of Luang Nam Tha, N 21°2'2.97", E 101°24'15.75", 582 m altitude, Nam Tha dam, vegetation, under stones, by night, by hand, P. Jäger leg. 2.III.2008.

L43 Ban Tavan (3), 9 air km ESE of Luang Nam Tha, N 20°58'59.80", E 101°29'36.46", small patch of secondary forest, small stream, sieving leaf litter, P. Jäger leg. 7.III.2008.

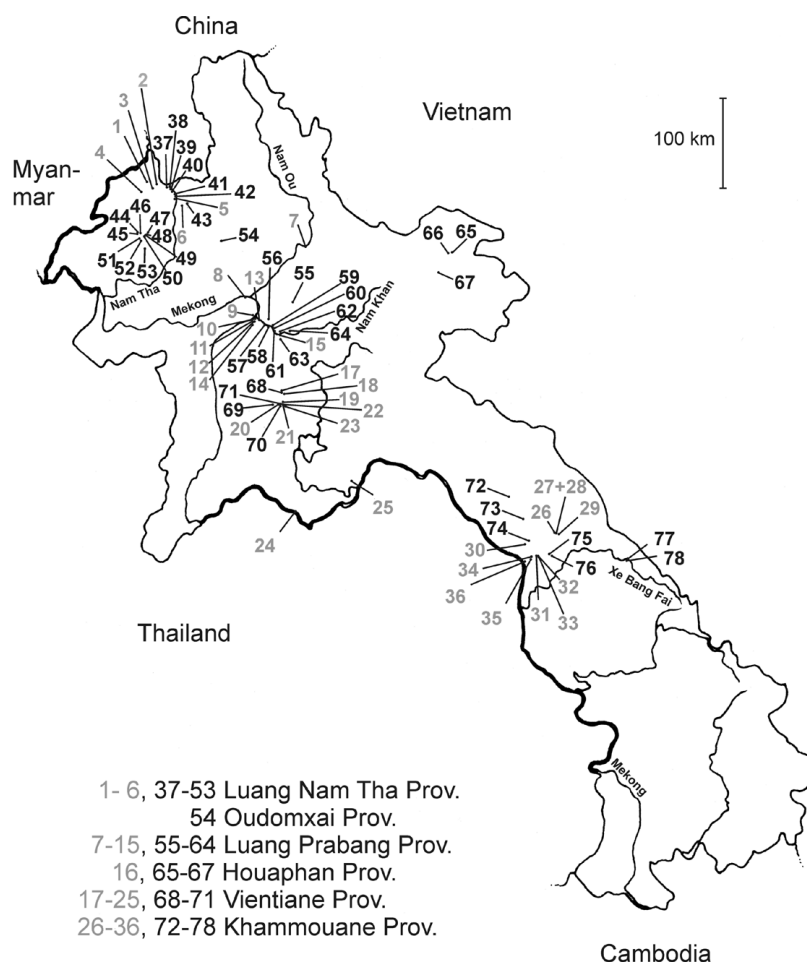
##### Vieng Phoukha (=Ban Samnakmuang)

L44 Phou Phasat, Nam Mai (=Nam Maye), 12 air km NNW of Vieng Phoukha, Tham Phasat, entrance cave N 20°46'11.18", E 101°0'46.22", resurgence cave N 20°46'43.15", E 101°0'51.32", 705 m altitude, inside and outside cave, secondary forest, sieving leaf litter, by hand, by day, P. Jäger leg. 4–5.III.2008; inside cave, Northern Lao-European Cave Project 2006, sample 21/05, H. Steiner leg. 8.II.2005, sample 76/06, H. Steiner leg. 9.II.2006.

L45 Tham Kuat, Laos-Map F 47-119, 10 air km NNW of Vieng Phoukha, N 20°45'34.20", E 101°0'29.82", inside cave, by hand, Northern Lao-European Cave Project 2006, sample 148/06, W. Zilling leg. 10.II.2006, Coll. H. Steiner.

L46 Tham Nam Rok, Laos-Map F47-119, 9 air km N of Vieng Phoukha, N 20°45.302', E 101°12, 457', inside cave, by hand, sample 73/06, Northern Lao-European Cave Project 2006, H. Steiner leg. 5.II.2006.

L47 Tham Nam Pob, Laos-Map F 47-119, 15 air km ENE of Vieng Phoukha, N 20°44'26.70", E 101°11'13.68", inside cave, by hand, sample 59/06, Northern Lao-European Cave Project 2006, H. Steiner leg. 6.II.2006.



**Fig. 1.** Collecting sites in Laos (with main rivers). Black numbers are referred to in the “Material and Methods” paragraph, grey numbers in Jäger (2007); L16 (Muong You) not mapped.

- L48 Nam Pon, E of Ban Eng, 12 air km ENE of Vieng Phoukha, Tham Nam Eng (=Kao Rao cave), cave entrance N 20°43'30.50", E 101°9'14.90", 729 m altitude, inside and outside cave, secondary forest, sieving leaf litter, Winkler apparatus, by hand, by day, P. Jäger leg. 3.III.2008.
- L49 Nam Pon, E of Ban Eng, 11 air km ENE of Vieng Phoukha, Tham Nam Eng, cave entrance N 20°43'21.12", E 101°9'3.69", 739 m altitude, inside cave, by hand, by day, P. Jäger leg. 5.III.2008.
- L50 Tham Pui, Laos-Map F47-119, 10 air km ENE of Vieng Phoukha, N 20°43'12.42", E 101°8'35.58", inside cave, by hand, sample 21/06, Northern Lao-European Cave Project 2006, L. Price leg. 12.II.2006, Coll. H. Steiner.
- L51 3 air km NW of Vieng Phoukha, between Khmu and Lahu village, N 20°41'36.90", E 101°2'17.50", 698 m altitude, slopes next to street, by hand, by day, P. Jäger leg. 5.III.2008.
- L52 Vieng Phoukha, N 20°40'29.77", E 101°3'31.40", 670 m altitude, village and surroundings, by hand, by day and by night, P. Jäger leg. 3-5.III.2008.
- L53 Oung Pra Ngiene cave, F 47-131/004, 17 air km SSE of Vieng Phoukha, N 20°32'20.28", E 101°8'7.08", inside cave, by hand, Northern Lao-European Cave Project 2006, sample 74/06, H. Steiner leg. 8.II.2006.
- Oudomxai Province**
- L54 Oudomxai, stupa hill, N 20°41'13.10", E 101°59'13.10", 638 m altitude, vegetation, under stones, walls, by day and by night, by hand, P. Jäger leg. 1.III.2008.
- Luang Prabang Province**
- L55 Tham Gia, Ban Hai Louong, Laos-Map 48-001, 30 air km ENE of Luang Phabang, N 19°57'13.98", E 102°25'27.42", inside cave, by hand, sample 14/04, H. Steiner leg. 27.12.2003.
- L56 Tham Nguen, Ban Xieng Lom, 14 air km E of Luang Phabang, N 19°52'22.44", E 102°16'4.02", inside cave, by hand, sample 15, 16/04, H. Steiner leg. 26./27.XII.2003





**Figs. 2–6.** Habitats in Laos during February/March 2008, the latest dry season. — 2, Gravel banks of Nam Khan at Ban Khonvay (L58); 3, Houay Kengkoung (L15) with overhanging branches, habitat of *Psechrus luangprabang*, *Eurychoera banna* and *Pseudopoda namkhan*; 4, Houay Tham (L57), habitat of *Laoponia saetosa*; 5, disturbed primary forest above Ban Kengkoung (L63); 6, small stream at Ban Tavan 3 (L43).

Nam Khan, Xieng Ngeun District

L57 Houay Tham, 18 air km SE of Luang Phabang, N 19°44'51.25", E 102°13'15.27", 303 m altitude, secondary forest, plantations, sieving leaf litter close to small stream, by day, P. Jäger leg. 24.III.2007.

L58 Ban Khonvay (=Ban Khon Whai), 19 air km SE of Luang Phabang, N 19°44'52.40", E 102°14'17.97", 360 m altitude, gravel bank with scattered vegetation, by day, by hand, P. Jäger leg. 24.III.2007.  
L59 Ban Pakbak, 22 air km SE of Luang Phabang, N 19°



- 45°2.08", E 102°16'52.94", 329 m altitude, village, vegetation, by day, by hand, P. Jäger leg. 23-24.III.2007.
- L60 Houay Kho, 23 air km SE of Luang Phabang, N 19°44'6.74", E 102°16'37.06", 328 m altitude, stream with vegetation, by day and by night, by hand, sieving leaf litter (mainly bamboo leaves), P. Jäger leg. 23.III.2007, 28.II.2008.
- L61 Ban Thin, 25 air km SE of Luang Phabang, N 19°41'48.34", E 102°15'1.80", 325 m altitude, gravel bank with scattered vegetation, by day, by hand, P. Jäger leg. 23.III.2007.
- L62 N of Ban Keng Koung, 28 air km SE of Luang Phabang, N 19°41'43.87", E 102°18'34.10", 440 m altitude, stream with vegetation, by day, sieving leaf litter, Winkler apparatus, P. Jäger leg. 25.II.2008.
- L63 S of Ban Keng Koung, 32 air km SE of Luang Phabang, N 19°39'35.61", E 102°18'53.51", 1000 m altitude, deep valley with primary and secondary forest, by day, sieving leaf litter, Winkler apparatus, P. Jäger leg. 22.II.2008.
- L64 Ban Nongdi (=Ban Longgni), 33 air km SE of Luang Phabang, N 19°41'6.04", E 102°18'6.04", 281 m altitude, secondary forest, stream, by day and by night, sieving leaf litter, sweep net, by hand, P. Jäger leg. 21-22.II.2007.
- fields, by hand, P. Jäger leg. 15.III.2008.
- L71 Tham Khan, N of Pha Ka, 3.2 air km W of Vang Vieng, N 18°55'32.00", E 102°24'57.70", 302 m altitude, inside cave, by hand, P. Jäger leg. 15.III.2008.

#### Khammouan Province

- L72 Tham Nam None, 70 air km NNW of Thakek, N 18°1'25.38", E 104°41'14.40", inside cave, by hand, sample 119, 154/04, H. Steiner leg. 16., 20.II.2004
- L73 Tham Boumlou, 40 air km N of Thakek, N 17°46'20.88", E 104°47'8.04", inside cave, by hand, sample 112/04, H. Steiner leg. 11.II.2004.
- L74 Tham Phi Seua, 19 air km NNE of Thakek, N 17°34'32.22", E 104°50'22.02", in cave, on wall, sample 25/05, H. Steiner leg. 15.II.2005.
- L75 Tham Phalagnang, Ban Phonlai, 27 air km E of Thakek, N 17°26'58.53", E 105°3'8.40", 160 m altitude, inside cave, by hand, P. Jäger leg. 11.III.2007.
- L76 Tham Lom, 29 air km E of Thakek, N 17°25'57.05", E 105°4'8.01", 154 m altitude, inside cave, by hand, P. Jäger leg. 11.III.2007.
- L77 Tham Xe Bangfai, N 17°22'19.8" E 105°50'18.6", Ban Nong Ping, inside cave, by hand, balcony and passage, French Khammouane Expedition 2007, samples 22, 24, 27, 29-30, 39, 42, 43, 60, 61, 75, 76, 79/07, H. Steiner leg. 13-14., 20., 22.II.2007.
- L78 Tham Pha Leusi, N 17°22'23.4" E 105°50'28.4", Ban Nong Ping, Xe Bangfai system, inside cave, by hand, French Khammouane Expedition 2007, samples 81, 82, 86, 92/07, H. Steiner leg. 15.II.2007.

#### Houaphan Province

- L65 Tham Pha Hin, Laos-Map F48-125, 15 air km ENE of Xam Neua, N 20°28'04.1", E 104°10'52.7", Sample 161-08, Northern Lao-European Cave Project, H. Steiner leg. 11.I.2008.
- L66 Tham Nam Long, Laos-Map F48-125, 12 air km ENE of Xam Neua, N 20°27'50.3", E 104°9'10.7", sample 145/08, entrance area resurgence, Northern Lao-European Cave Project 2008, H. Steiner leg. 10.I.2008.
- L67 Tham Long Nguapha, Laos-Map F 48-135, Vieng Tong Distr., N 20°13'5.3" E 103°24'12.0", Northern Lao-European Cave Project 2007, sample 129/07: H. Steiner leg. 17.I.2007, sample 133/07: L. Prize leg. 15.I.2007, Coll. H. Steiner.

#### Vientiane Province

##### Vang Vieng

- L68 Tham Phatad, Pha Hao, S of Ban Nampat, 12 air km N of Vang Vieng, N 19°1'45.10", E 102°25'59.40", 258 m altitude, inside cave, by hand, P. Jäger leg. 14.III.2008.
- L69 Tham Pou Na, cliff north of Houay San, 6.75 air km WNW of Vang Vieng, N 18°55'32.50", E 102°22'55.50", 279 m altitude, inside cave, by hand, P. Jäger leg. 15.III.2008.
- L70 Tham Pratchao, between Ban Nathong and Pha Ka, 4.2 air km W of Vang Vieng, N 18°54'52.00", E 102°24'32.40", 237 m altitude, hut in agricultural

#### Results

##### Caponiidae Simon 1890

The first representatives (4 males, 1 female, 1 juvenile) of this spider family ever found in Asia were collected by sieving leaf litter in humid places close to streams or in front of limestone caves. Specimens were described as new genus and species (Platnick & Jäger 2008).

##### *Laoponia saetosa* Platnick & Jäger 2008

Figs. 4, 7-14

This species was described from material collected at the Nam Khan river at different localities. Males were collected at L60 (type locality) and L57, one female was recorded in 2008 from Houay Keng Koung (L15). A probably conspecific juvenile was collected at L7 in the North of Luang Phabang Province. The species was also recorded from N Vietnam (Shuqiang Li, in litt.) from different localities in National parks approximately 350 km apart from the Nam Khan valley.

**Morphology.** In one male paratype illustrated here two small dark patches under the cuticle lateral to the eyes were observed (Fig. 7). Whether these represent evolutionary remnants of two additional eyes is not clear.

## Oecobiidae Blackwall 1862

*Oecobius marathaus* Tikader 1962

**Material examined.** 1 female (SMF 58680), L7, village, in and at houses, by hand, P. Jäger & F. Steinmetz leg. 16-17.III.2007.

The specimen was identified according to illustrations in Santos & Gonzaga (2003).

## Hersiliidae Thorell 1870

*Hersilia asiatica* Song & Zheng 1982

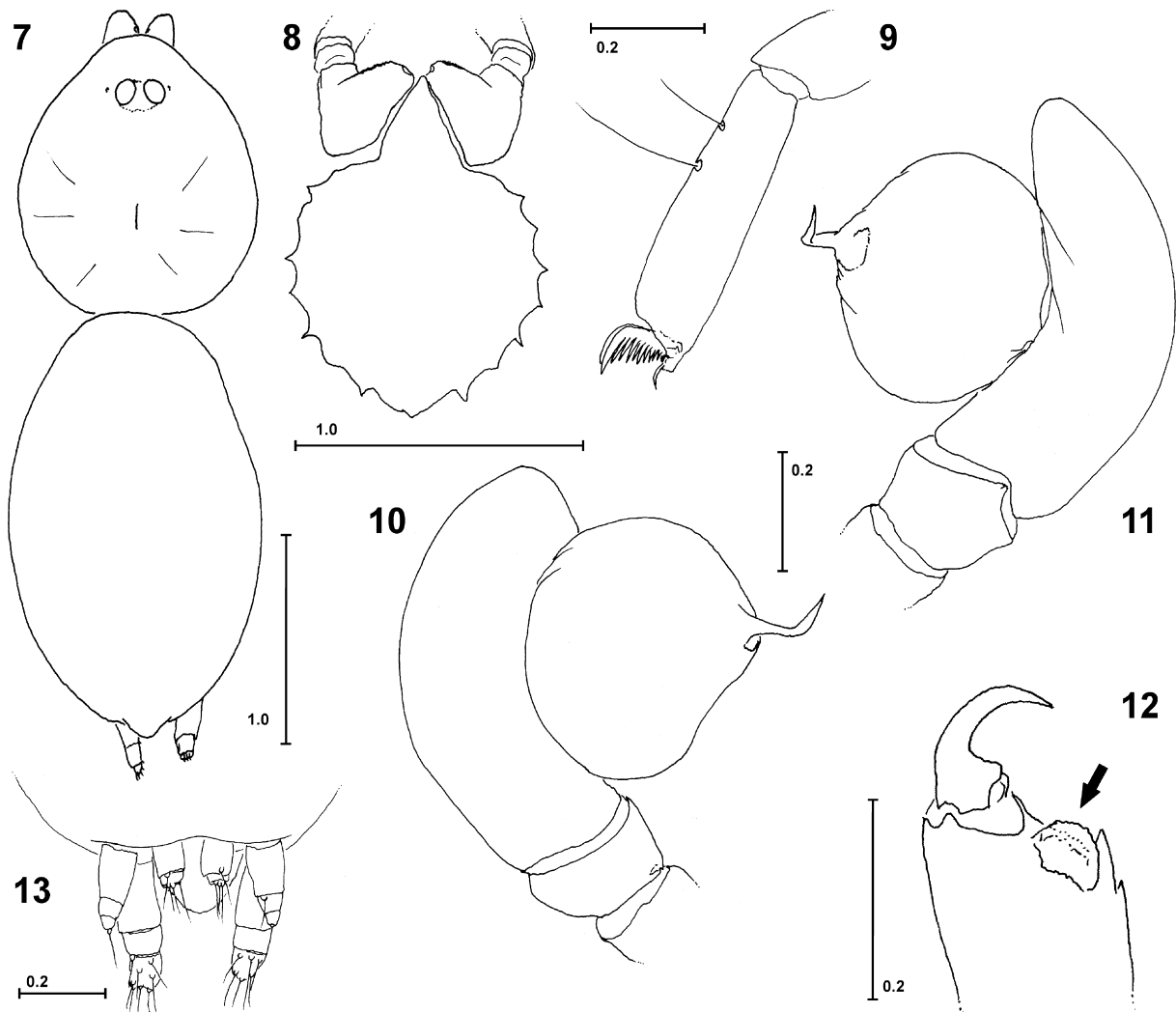
**Material examined.** 2 females (SMF 58679), L7, in front of limestone cave, by hand, P. Jäger & F. Steinmetz leg. 18.III.2007. 1 male, 1 subadult female (SMF 58741), L7, on tree bark, by night, by hand, P. Jäger & F. Steinmetz leg. 18.III.2007.

*Hersilia flagellifera* Baehr & Baehr 1993

Fig. 15

**Material examined.** 1 female (SMF 58760), L71, in cave, by hand, P. Jäger leg. 15.III.2008.

The female from a cave close to Vang Vieng represents the first record for Laos and the first out of the type locality in Indonesia, Sumatra. Female copulatory organs correspond well with illustrations given by Baehr & Baehr (1993). Vulva with internal duct system as in right half of figure 31-f in Baehr & Baehr (1993), i.e. not inflated, but tightly coiled. Size fits also in description of type material with dorsal shield of prosoma being 1.7 mm and opisthosoma being 2.0 mm. Colouration is a bit brighter than in illustrated specimen by Baehr & Baehr (1993: fig. 6). But this and the more strongly pronounced annulations of legs are considered intraspecific variation, as described by Baehr & Baehr as “considerable”.



**Figs. 7–13.** *Laoponia saetosa* Platnick & Jäger 2008, male paratype from Houay Tham (L57). — 7, habitus, dorsal view; 8, sternum, labium and gnathocoxae, ventral view; 9, left tarsus I, prolateral view; 10, left male palp, prolateral view; 11, right male palp, retrolateral view, mirrored; 12, left chelicerae, ventral view (arrow pointing to membranous lobe); 13, spinnerets, ventral view.

## Tetragnathidae Menge 1866

*Guizygiella* Zhu, Kim & Song 1997

In the course of the identification of *Guizygiella* spiders from Laos it was recognised that *Zygiella indica* Tikader & Bal 1980 and *Z. shivui* Patel & Reddy 1990 belong clearly to the genus *Guizygiella* according to its genital characters of male and female (Tikader 1982, figs. 423–427; Patel & Reddy 1990, figs. 8–11) and are herewith formally transferred: *Guizygiella indica* (Tikader & Bal 1980) comb. nov. and *Guizygiella shivui* (Patel & Reddy 1990) comb. nov. Female copulatory organs of the latter species point to a synonymy with *G. nadleri*, but since the male copulatory organ is not well recognisable from drawings in Patel & Reddy (1990, figs. 10–11) the names are not synonymised here. Another species listed under *Zygiella*, *Z. calyptata* (Workman 1894) might also belong to *Guizygiella*, but according to illustrations, e.g., exclusively of females in Levi (1974, figs. 76–80) congenerity is not clear.

The copulatory organ of one *Guizygiella* female, collected in Oudomxai (L54), was similar to *G. salta* (Yin & Gong 1996) according to illustrations of Yin & Gong (1996, figs. 18–20; sub *Zygiella salta*) and Yin (2002, figs. 2–3; sub *Zygiella baojingensis*), but could not identified unambiguously.

*Guizygiella guangxiensis* (Zhu & Zhang 1993)

**Material examined.** 1 male (SMF 58746), L5, P. Jäger leg. 8.XI.2004. 1 male, 3 females (all without scapus) (SMF 58745), L54, by night, P. Jäger leg. 1.III.2008. 1 female (SMF 58742), L7, by night, by hand, P. Jäger leg. 29.II.2008. 5 females (one with scapus) (SMF 58714), L 53, P. Jäger leg. 23.III.2007. 1 male, 1 female (without scapus) (SMF 58716), L22, P. Jäger & F. Steinmetz leg. 12–13.III.2007. 1 male, 1 female (without scapus) (SMF 58715), L31, P. Jäger & F. Steinmetz leg. 10.III.2007.

For comments on presence or absence of the scapus and illustrations see Jäger (2007).

*Guizygiella nadleri* (Heimer 1984)

**Material examined.** 1 male (SMF 58743), L5, trees beside street, by night, by hand, P. Jäger leg. 2.III.2008. 1 male, 1 female, 1 subadult female (SMF 58744), L54, by night, by hand, P. Jäger leg. 1.III.2008. 1 male, 4 females, 1 subadult male, 4 juveniles (SMF 58717), L22, P. Jäger & F. Steinmetz leg. 12–13.III.2007.

*Leucauge tessellata* (Thorell 1887)

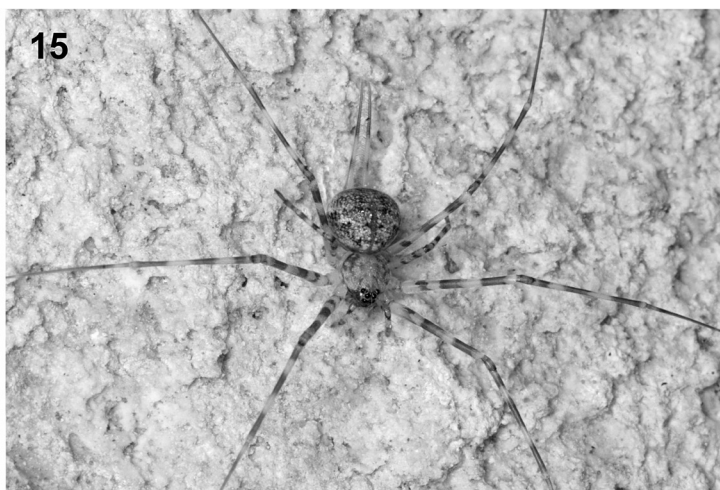
**Material examined.** 1 male (SMF 58701), L5, P. Jäger & V. Vedel leg. 7.XI.2004. 1 female (SMF 58702), L5, P. Jäger & V. Vedel leg. 8.XI.2004. 2 females (SMF 58703), L6, P. Jäger & V. Vedel leg. 9.XI.2004. 5 females (SMF 58704), L12, P. Jäger & V. Vedel leg. 14.XI.2004. 1 female (SMF 58705), L20, outside cave, by hand, sweeping, P. Jäger & V. Vedel leg. 17.XI.2004.

*Orsinome vethi* (Hasselt 1882)

Figs. 19–23

**Material examined.** 2 males, 2 females, 2 juveniles (SMF 58755), L41, by hand, P. Jäger leg. 7.III.2008. 1 female (SMF 58756), L15, along stream, by night, by hand, P. Jäger leg. 23.II.2008. 1 male, 1 subadult male (SMF 58713), L 57, by night, P. Jäger leg. 21.III.2007. 1male, 1 female, 1 subadult female (SMF 58712), L 57, by day, sweepnet, P. Jäger leg. 22.II.2007. 1 male, 4 females (SMF 58711), L18, water-duct under street, in rocks and vegetation close to small stream, by hand, by sweepnet, P. Jäger, M. Sandner & F. Steinmetz leg. 14.III.2007. 1 female (SMF 58754), L18, water-duct under street, by day, by hand, P. Jäger leg. 14.III.2008.

**Material examined for comparison.** 1 female (SMF 59146), Indonesia, Flores, East of Labuan Bajo, Maria Chapel, S 8°35′05.3″, E 119°58′55.4″, S. Huber leg.



**Figs. 14–15.** Dorsal habitus of female spiders. — 14, *Laoponia saetosa* Platnick & Jäger 2008 from Houay Kengkoung (L15); 15, *Hersilia flagellifera* Baehr & Baehr 1993 from Vang Vieng (L71).



24.III.2009. **First record for Flores.**

The only illustration of the female copulatory organ is given in Zhu et al. (2003). The authors show an epigyne with distinctly separated lateral lobes. In Laotian material and in the female from Flores these lobes were in some individuals fused (Figs. 20–21). The fissure can be detected by sclerotised bubbles under the cuticle (e.g., arrow in Fig. 20). This phenomenon is known from *Sinopoda* spp. in which the bubbles represent apparently remnants of the fissure (Jäger & Ono 2000, figs. 27, 35, 37, 44, 46) and indicate a preceding fusion of two structures (here: lateral lobes). Another difference concerns the shape of the anterior margin of the epigynal pit. In one specimen from Ban Phoxay (Fig. 20) it is distinctly different. The posterior part of the internal duct system corresponds well with the figures given by Zhu et al. (2003). The epigynal field and slit sense organs were illustrated here as well as they contain at least some descriptive evidence. Figure 19 shows the typical resting position of a female spider.

According to Platnick (2009) the record of this species in Flores is the first record from this Indonesian Island and the most eastern record so far.

*Tetragnatha ceylonica* O. Pickard-Cambridge 1869

**Material examined.** 1 male (SMF 58708), L3, by night, by hand, P. Jäger & V. Vedel leg. 6.XI.2004. **First record for**

**Laos.**

*Tetragnatha geniculata* Karsch 1891

**Material examined.** 2 males (SMF 58706), L13, P. Jäger & J. Altmann leg. 5.III.2006. 1 female (SMF 58747), L15, along stream, by night, by hand, P. Jäger leg. 23.II.2008.

*Tetragnatha lauta* Yaginuma, 1959

**Material examined.** 1 male, 2 females (SMF 58707), L6, P. Jäger & V. Vedel leg. 9.XI.2004. **First record for Laos.**

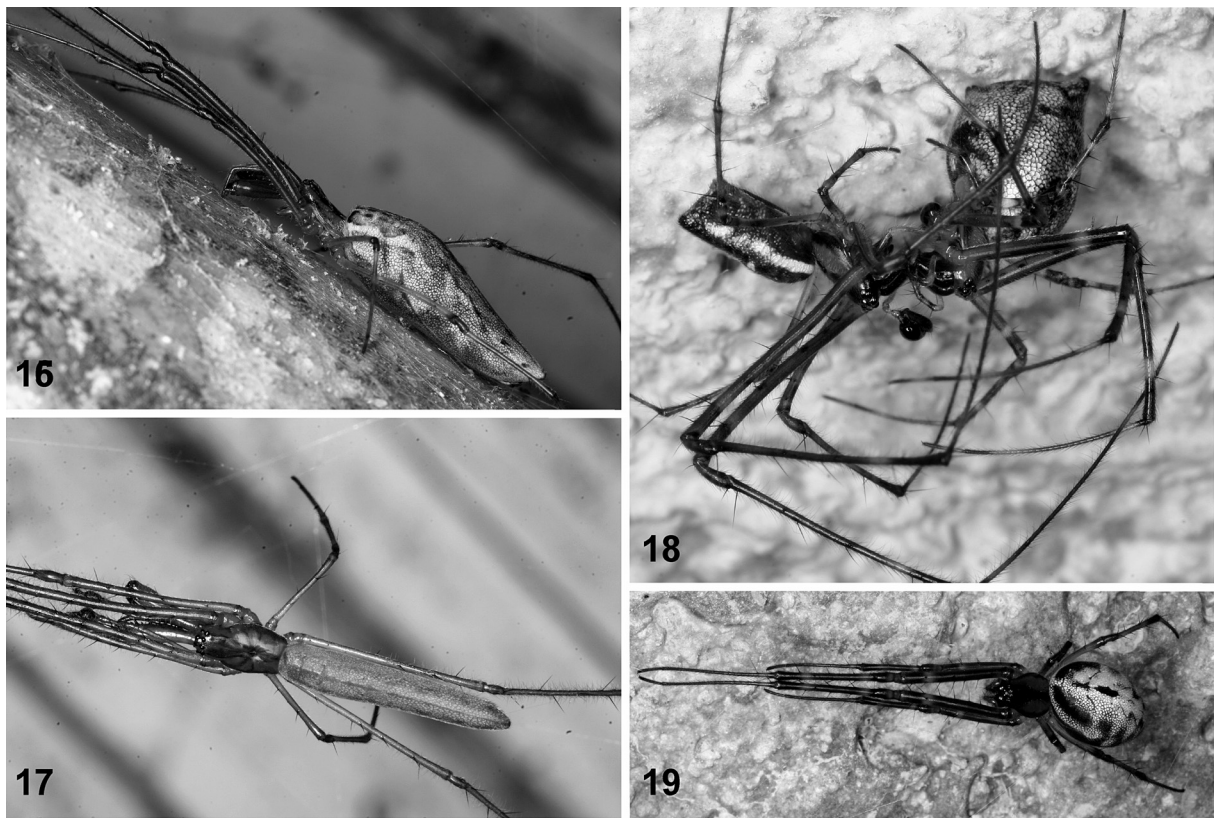
Known distribution: Hong Kong, Korea, Taiwan, Japan (Platnick 2009), Laos (present paper).

*Tetragnatha mandibulata* Walckenaer 1842

Figs. 16–17

**Material examined.** 1 male (SMF 58710), L19, in front of limestone cave, P. Jäger & F. Steinmetz leg. 14.III.2007. 4 males, 4 females (SMF 58748), L70, under roof of hut, by day, by hand, P. Jäger leg. 15.III.2008. 1 male, 5 females (SMF 58709), L23, P. Jäger & V. Vedel leg. 16.XI.2004.

Individuals were found not only in habitats close to streams, but also in drier places. Opisthosoma of males is reddish brown without the distinct pattern of females (Figs. 16–17).



**Figs. 16–19.** *Tetragnatha mandibulata* Walckenaer 1842 from Vang Vieng (L70). — 16, female, lateral view; 17, male, dorsal view. *Tylorida ventralis* (Thorell 1877) from Ban Phoxay (L18). — 18, male and female in copula. *Orsinome vethi* (Hasselt 1882) from Ban Phoxay (L18). — 19, female, dorsal view.



*Tylorida* Simon 1894

Nine *Tylorida* species are currently known, seven occur in Asia. Two species have a wide distribution and were expected to occur in Laos: *T. striata* (China to Australia) and *T. ventralis* (India to Taiwan, Japan, New Guinea) (Platnick 2009). Both species could be identified from Laotian material according to Tanikawa (2005) and Zhu et al. (2003). However, in *T. ventralis* a considerable variation in epigynes and the course of male sperm duct were noticed and some examples are therefore illustrated here (Figs. 24, 28–31, 33, 36–37). Jäger (2007) mentioned another *Tylorida* species (*Tylorida* sp. cf. *mengla* Zhu, Song & Zhang 2003), which could not be identified clearly, as only one female was available at that time. Now additional series of this species were collected and identified as *Tylorida tianlin* Zhu, Song & Zhang 2003 by Mingsheng Zhu (in litt.) by means of illustrations made by P. Jäger. As there is also a considerable variation in epigynes and males palps (especially course of sperm duct) and the male of *T. mengla* is not known, this species is not listed here, until a thorough analysis of this material is made. In specimens of this unidentified species from Vang Vieng (L20) a free sector could be observed in the orb-web, through which the signal thread was running to the retreat. The female was sitting in a funnel-shaped silken hollow.

*Tylorida striata* (Thorell 1877)

**Material examined.** 1 male, 2 females (SMF 58718), L5, P. Jäger & V. Vedel leg. 7.XI.2004. 1 female (SMF 58719), L6, P. Jäger & V. Vedel leg. 9.XI.2004. 1 male (SMF 58720), L10, P. Jäger & V. Vedel leg. 12.XI.2004. 1 female (SMF 58721), L12, P. Jäger & V. Vedel leg. 14.XI.2004.  
**First record for Laos.**

*Tylorida ventralis* (Thorell 1877)

Figs. 18, 24–37

**Material examined.** 1 female (SMF 58723), L2, P. Jäger & V. Vedel leg. 6.XI.2004. 2 females (SMF 58724), L5, P. Jäger & V. Vedel leg. 7.XI.2004. 1 male, 2 females (SMF 58725), L5, P. Jäger & V. Vedel leg. 8.XI.2004. 1 male (SMF 58728), L7, entrance of limestone cave, by hand, P. Jäger & F. Steinmetz leg. 16–17.III.2007. 3 males, 6 females, 1 subadult male, 1 subadult female (SMF 58722), L10, P. Jäger & V. Vedel leg. 12.XI.2004. 2 females (SMF 58729), L 53, P. Jäger leg. 23.III.2007. 3 females, 1 subadult female, 2 juveniles (SMF 58753), L66, H. Steiner leg. 10.I.2008. 9 males, 20 females, 3 subadult males, 7 juveniles (SMF 58727), L18, water-duct under street, in rocks and vegetation close to small stream, by hand, by sweepnet, P. Jäger, M. Sandner & F. Steinmetz leg. 14.III.2007. 4 males, 3 females, 1 juvenile (SMF 58752), L18, water-duct under street, by day, by hand, P. Jäger 14.III.2008. 1 female (SMF 56378), L22, P. Jäger & V. Vedel leg. 16.XI.2004. 2 females (SMF 58726), L22, riverbanks, vegetation, at night, by hand, P. Jäger & F. Steinmetz leg. 12–13.III.2007. **First record for Laos.**

This *Tylorida* species is abundant and frequently collected. Three copulae could be observed in a water-duct under the street close to Ban Phoxay (L18; Fig. 18).

## Nephilidae Simon 1894

*Herennia multipuncta* (Doleschall 1859)

**Material examined.** 1 female, 1 subadult female (SMF 58694), L19, in front of limestone cave, on tree trunk, by hand, P. Jäger & F. Steinmetz leg. 14.III.2007. 1 male (SMF 58751) L29, on shrubs and rocks, by night, by hand, P. Jäger leg. 18–19.II.2003.

*Nephila antipodiana* (Walckenaer 1842)

This species was listed in Jäger (2007) under *N. laurinae* Thorell 1881. Harvey et al. (2007) recognised the latter name as junior synonym of *N. antipodiana* without noting the new synonymies in the abstract or in the text. Consequently they were not recognised by Platnick (2009).

*Nephila pilipes* (Fabricius 1793)

**Material examined.** 1 female (SMF 58699), L7, in front of limestone cave, at rocks, by hand, P. Jäger & F. Steinmetz leg. 16–17.III.2007. 1 female, 1 subadult female (SMF 58700), L10, by hand, P. Jäger leg. 25.III.2007.

*Nephilengys malabarensis* (Walckenaer 1842)

**Material examined.** 1 male, 1 subadult female (SMF 58696), L7, in front of limestone cave, in vegetation, by hand, P. Jäger & F. Steinmetz leg. 16–17.III.2007. 1 juvenile (SMF 58750), L7, in front of limestone cave, in vegetation, by night, by hand, P. Jäger leg. 29.II.2008. 1 subadult female (SMF 58697), L15, by hand, P. Jäger leg. 22.III.2007. 1 subadult female (SMF 58698), L59, by hand, P. Jäger leg. 24.III.2007. 1 juvenile (SMF 58695), L25, tree trunk beside street, by hand, P. Jäger & V. Vedel leg. 1.XI.2004.

## Araneidae Simon 1895

*Acusilas malaccensis* Murphy & Murphy 1983

**Material examined.** 1 male, 1 female (SMF 56366), L6, Jäger & Vedel leg 9.XI.2004, J. Birkedal Schmidt det. 2007. 2 females, 1 juvenile (SMF 56409), L15, P. Jäger & J. Altmann leg. 7.III.2006, J. Birkedal Schmidt det. 2007.  
**First record for Laos.**

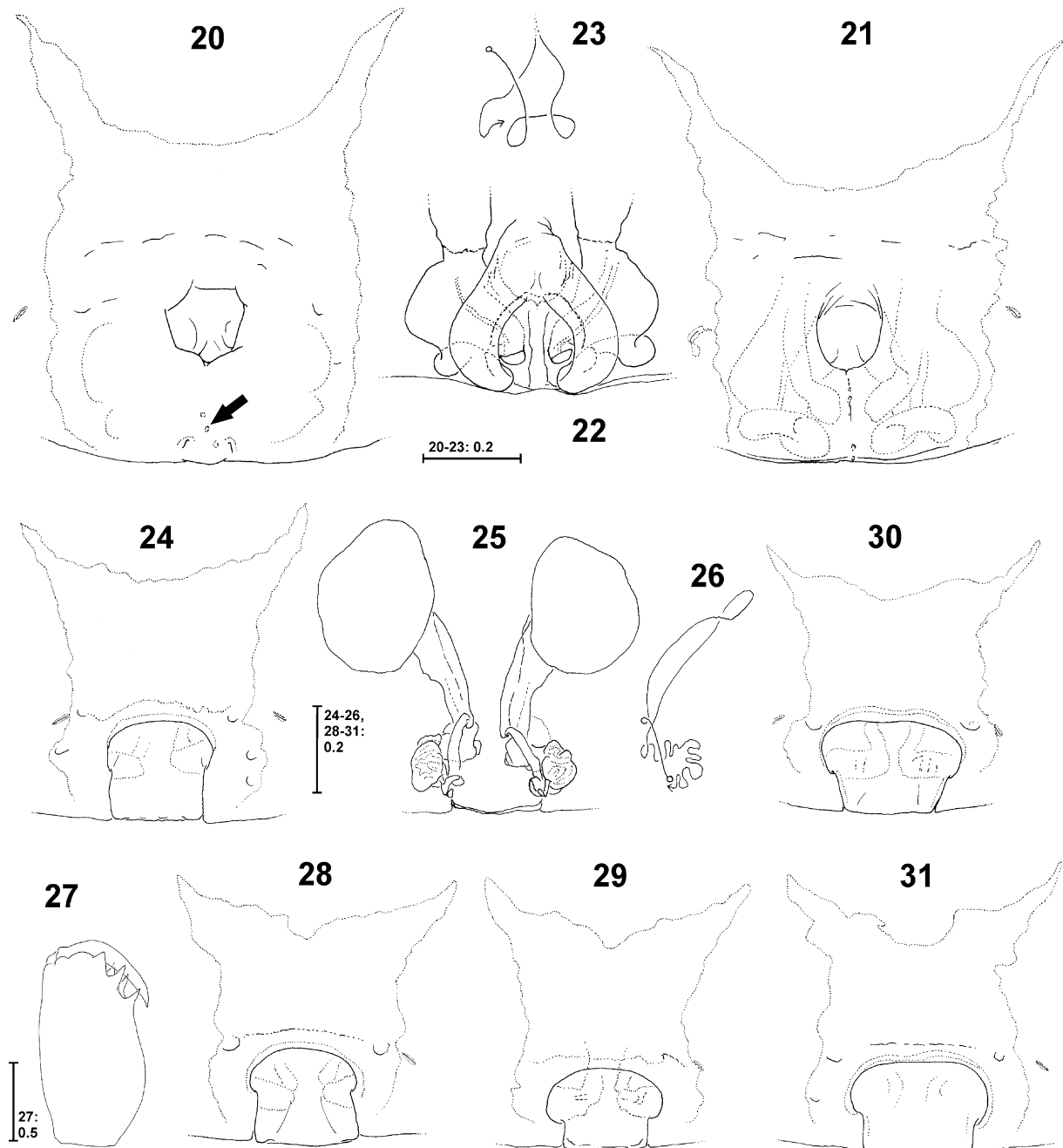
*Anepsion maritatum* (O. Pickard-Cambridge 1877)

**Material examined.** 1 female (SMF 58682), L10, disturbed forest, vegetation, by day, by hand, P. Jäger leg. 25.III.2007.  
**First record for Laos.**

The female was identified according to illustrations by Chrysanthus (1961).

*Arachnura melanura* Simon 1867

**Material examined.** 1 female (SMF 58683), L 53, P. Jäger leg. 23.III.2007. **First record for Laos.**



**Figs. 20–31.** *Orsinome vethi* (Hasselt 1882), females, 20, Ban Phoxay (L18); 21–23, Ban Kengkoung (L15); *Tylorida ventralis* (Thorell 1877), females; 24–29, Ban Phoxay (L18); 30–31, Tham Nam Long (L66). — 20–21, 24, 28–31, copulatory organs, epigyne, ventral view; 22, 25, vulva, posterior part, dorsal view; 23, 26, schematic course of internal duct system, posterior part, dorsal view; 27, right chelicera, ventral view. Arrow points to sclerotised bubbles under cuticle; see text for explanation.

*Araneus ellipticus* (Tikader & Bal 1981)

**Material examined.** 1 female (SMF 56379), L22, P. Jäger & V. Vedel leg. 16.XI.2004. 1 male (SMF 56320), L29, P. Jäger leg. 18–19.II.2003. **First record for Laos.**

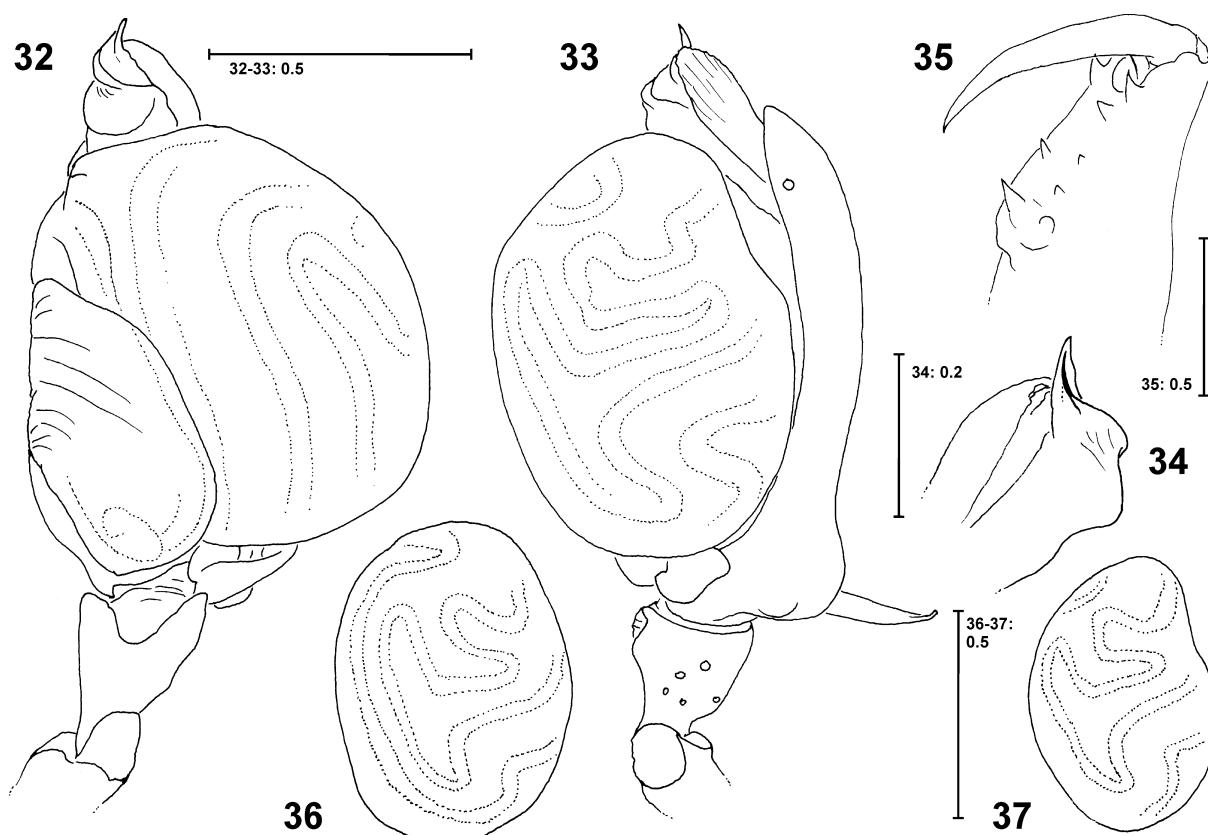
The species was transferred from the genus *Neoscona* by Grasshoff (1986), but this transfer was not recognised by most of subsequent authors. Specimens were identified according to illustrations in Tikader & Bal (1981), Tikader (1982) and Yin et al. (1997). A loan of the type material of

this species from the Zoological Survey of India (ZSI) in Calcutta was not possible, since it was not located during a personal visit of Manju Siliwal (in litt.).

*Argiope dang* sp. n.

Figs. 38–51

**Type material.** Holotype male (SMF 58757), L22, riverbanks, vegetation, at night, by hand, P. Jäger & F. Steinmetz leg. 12–13.III.2007. Paratypes. 1 male, 2 females (SMF



**Figs. 32–37.** *Tylorida ventralis* (Thorell 1877), males from Ban Kengkoung. — 32, left palp, ventral view; 33, left palp, retrolateral view; 34, embolus and conductor, dorsal view; 35, left chelicera, ventral view; 36–37, tegulum, retrolateral view, showing variation of sperm duct.

58758), same data as for holotype.

**Etymology.** The specific epithet is derived from the Lao word “dàng”, meaning “loud” and referring to the noise at the riverbanks in Vang Vieng, where the type material of the species was collected while loud techno music was playing in the otherwise beautiful landscape; term in apposition.

**Diagnosis.** Male copulatory organ similar to that of *A. cameloides* Zhu & Song 1994 described from Hainan, China (Zhu et al. 1994, figs. 8a–c), but distinguished by the following characters: Embolus more strongly undulate, embolus tip bent at almost 180° (Fig. 38), median apophysis having slightly longer and thinner spur and two small distal apices (Fig. 39: arrow). Females are unique in having a long epigyne sticking out at a right angle (Fig. 41) and a characteristic opisthosomal colour pattern (Figs. 49–51).

**Note.** The spur of the median apophysis was recognised by Nessler et al. (2007) as “genital trait under sexual selection”, i.e. promoting the breakage of the embolus and thus plugging the female genital opening in an experimental approach. Therefore it should species-specific and considered in diagnoses carefully.

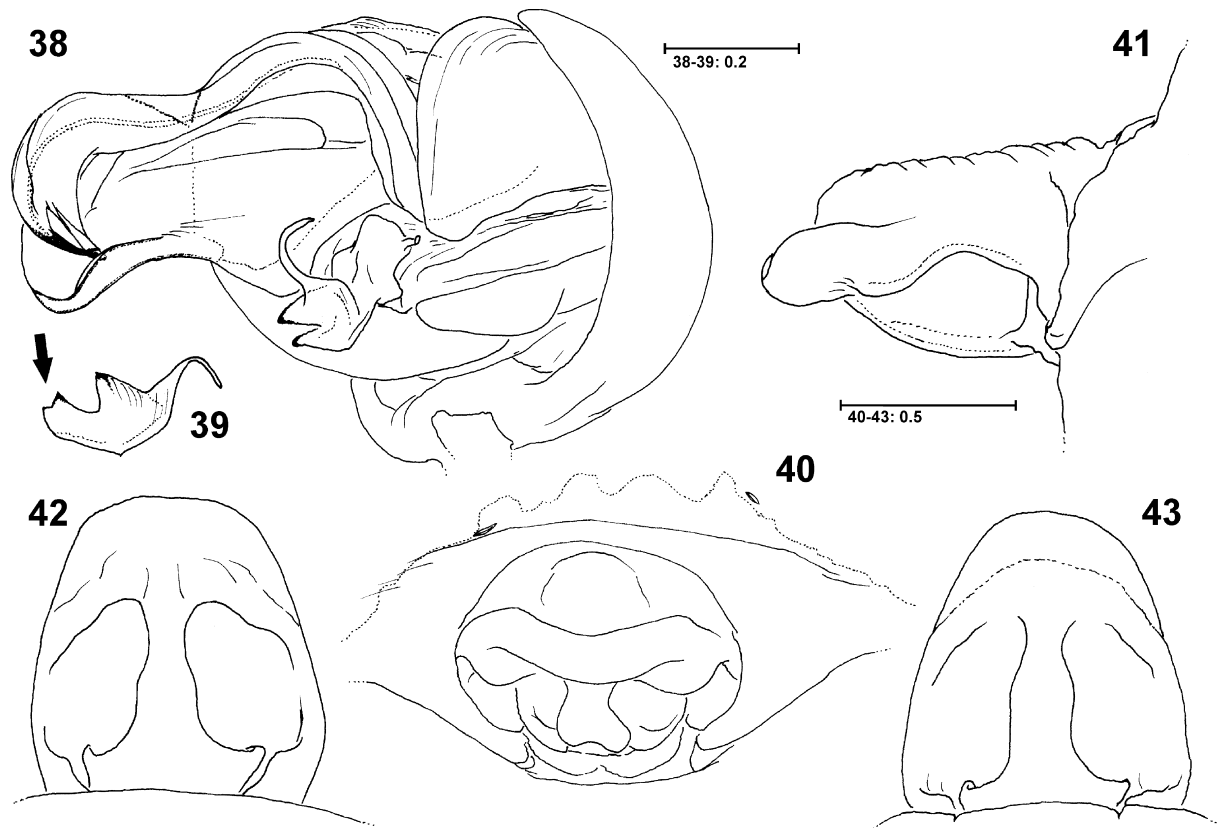
**Description.** Male. PL 1.9–2.0, PW 1.8–1.9, AW 0.7, OL 2.0–2.2, OW 1.2–1.4. Eye diameters and interdistances: AME 0.16, ALE 0.07, PME 0.15, PLE 0.13, AME–AME 0.08, AME–ALE 0.06, PME–PME 0.22, PME–PLE 0.23, AME–PME 0.19, ALE–PLE 0.01, clypeus AME 0.06,

clypeus ALE 0.06. Palp and leg measurements of male paratype: palp 1.45 (0.37, 0.18, 0.27, –, 0.63), I 9.9 (2.8, 0.9, 2.3, 2.8, 1.1), II 9.7 (2.8, 0.9, 2.3, 2.7, 1.0), III 5.3 (1.8, 0.6, 1.0, 1.2, 0.7), IV 7.8 (2.6, 0.7, 1.6, 2.1, 0.8). Leg formula 1243. Chelicera length 0.55, 4 anterior, 3 posterior teeth, 8 denticles.

**Colouration.** Dorsal shield of prosoma yellow-brown with black markings in anterior half (missing in paratype), darker marginally, fovea brown (Fig. 44). Sternum pale yellow-brown with bright anterior and posterior median patch. Labium pale yellow, gnathocoxae pale yellow, external part darker (Fig. 46). Chelicerae yellowish brown with black colouration, especially in basal half and externally. Coxa II yellow, coxa I black in distal half, coxa IV with distal black patch, coxa III black with yellow patch in basal half (Fig. 46). Legs yellowish-brown with proximal segments darker and numerous long spines; proximal tibia brighter; metatarsus (except for very proximal part) and tarsus pale yellow. Dorsal opisthosoma bright silvery with six muscle sigilla and a darker posterior half (Fig. 44); laterally with black markings in anterior half, indistinctly continued in posterior half (Fig. 45); ventrally with distinct black median band, surrounded by bright white patches; spinnerets dark (Fig. 46).

Female. PL 4.7–5.0, PW 4.0–4.3, AW 1.9–2.1, OL 8.4–9.1, OW 5.3. Eye diameters and interdistances: AME 0.27, ALE





**Figs. 38–43.** *Argiope dang* sp. nov., male holotype and female paratypes from Vang Vieng (L22). — 38, right male palp, prolateral view; 39, male median apophysis, proximal view; 40–43, female epigyne (40, ventral view; 41, lateral view; 42–43, posterior view).

0.17, PME 0.30, PLE 0.30, AME-AME 0.20, AME-ALE 0.37, PME-PME 0.31, PME-PLE 0.71, AME-PME 0.44, ALE-PLE 0.00, clypeus AME 0.19, clypeus ALE 0.15. Palp and leg measurements of one female paratype: palp 6.0 (2.0, 0.7, 1.2, -, 2.1), I 28.8 (8.4, 2.4, 7.0, 9.2, 1.8), II 28.1 (8.4, 2.3, 6.7, 9.0, 1.7), III 16.3 (5.7, 1.6, 3.4, 4.3, 1.3), IV 26.6 (9.2, 2.2, 5.6, 8.2, 1.4). Leg formula 1243. Chelicera length 1.7, 3 anterior teeth, 3 posterior teeth, few indistinct denticles (<10); palpal claw with 7 teeth.

**Colouration.** Dorsal shield of prosoma yellow-brown with black, partly radial markings, becoming darker anteriorly, fovea indistinct (Fig. 47). Sternum bright yellowish-white with three pairs of lateral humps and one posterior hump (Fig. 48). Labium and gnathocoxae pale yellow. Chelicerae dark brown. Coxae I–III black, partly with small yellow patches, coxa IV yellow with small black patch. Legs reddish-brown with small dark dots, numerous short spines on proximal segments and long spines at distal segments; proximal tibia brighter; ventral tibia IV with a brush of hairs. Dorsal opisthosoma bright silvery with darker partly reticulate pattern especially in posterior half (Fig. 49); laterally with black irregular markings (Fig. 50); ventrally with distinct black median band, with six white spots in anterior half, darker in posterior part, surrounded by bright white longitudinal bands; spinnerets reddish brown (Fig. 51).

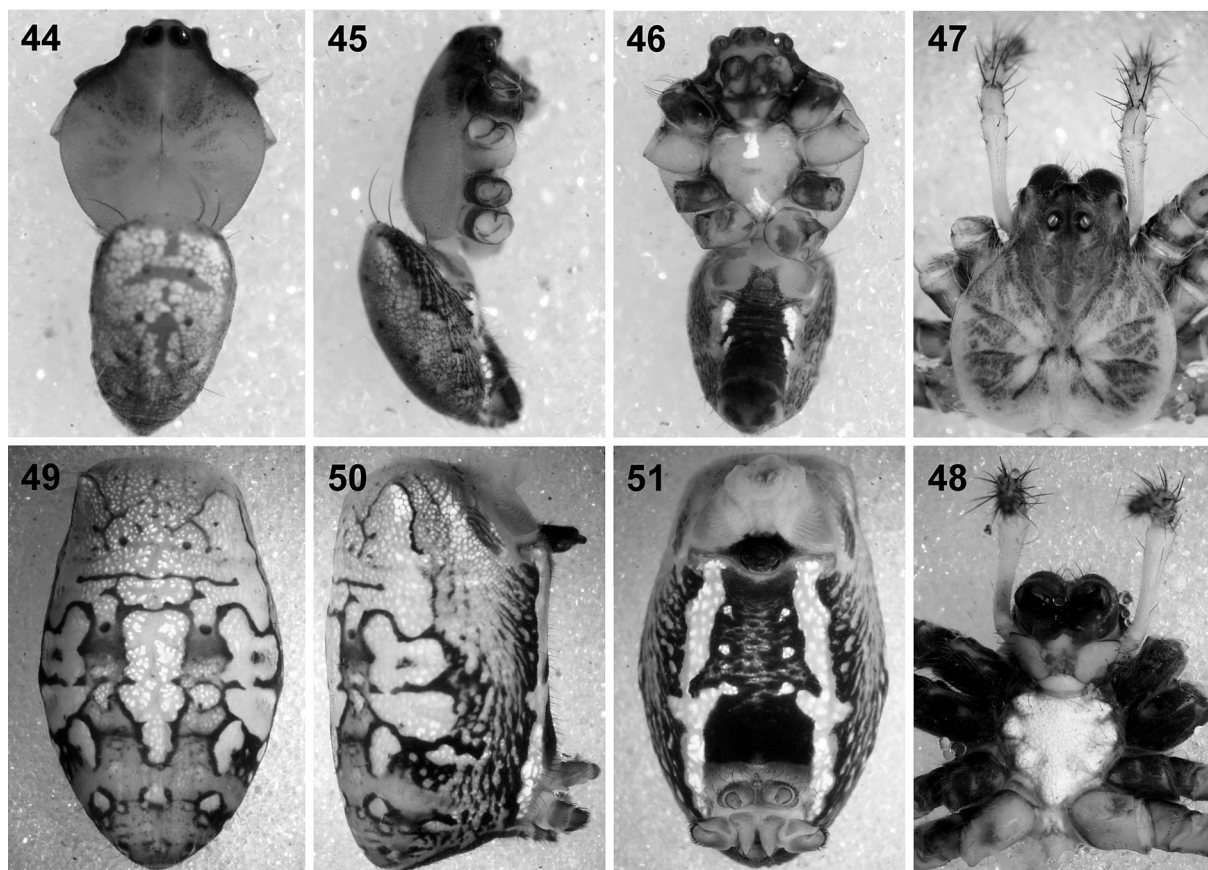
**Distribution.** Known only from the type locality.

#### *Argiope pulchella* Thorell 1881

Figs. 52–68, 74

**Material examined.** 1 female, 1 male embolus' tip in epigyne (SMF 58681), L18, at water-duct under street, by day, by hand, P. Jäger leg. 14.III.2008.

Material identified in Jäger (2007) as *A. versicolor* (Doleschall 1859) belongs to *A. pulchella* and is not listed here again. Levi (in litt.) assumes that both species are in fact synonyms, but distinguishes both species in his revision by means of different characters of copulatory organs of male and female (Levi 1983). In Laotian females a gradual change of the epigynal shape from “V”-shaped (Fig. 56) to semicircular (Fig. 65) was found, which corresponds with illustrations of both species in Levi (1983: figs. 238, 241: *A. pulchella*; fig. 251: *A. versicolor*). One female from Sipora (Fig. 70) exhibited a slightly bilobate posterior margin as shown in Levi (1983: fig. 254). It may belong to *A. versicolor*. Internal duct system (Fig. 73) was not “wider and shorter than those of *A. pulchella*” (Levi 1983: 306) but slightly longer and narrower than that of *A. pulchella* (Figs. 67–68). Another character used by Levi for distinguishing between the two species is the shape of embolus and the length of the broken part, which is often found in the epigynes of *Argiope* females: the pendant (Levi 1983: fig. 13), a subdistal embolic apophysis, should be longer than the tip of the embolus in *A. pulchella*, and the broken-off



**Figs. 44–51.** *Argiope dang* sp. nov., male holotype (44–46) and female paratype (47–51) from Vang Vieng (L22). — 44, 47, 49, dorsal habitus; 45, 50, lateral habitus; 46, 48, 51, ventral habitus.

part of the embolus should be smaller in *A. pulchella*. In contrast to his findings, the pendant of *A. pulchella* is as long as or shorter than the tip (Fig. 52) and corresponds with Levi (1983: fig. 259: *A. versicolor*). Concerning the broken-off emboli it seems that the embolus can break off at two cracks as it was shown for *A. bruennichi* (Scopoli 1772) by Uhl et al. (2007). One is located distally (Fig. 54: arrow), another one more basally. When examining the epigyne of one female (Fig. 56) it contained two emboli, one larger, one smaller. When pulling the larger embolus out it broke at the distal crack (Fig. 54). Therefore the distinction by Levi might be only based on an artefact. Before both species are synonymised it should be investigated if there is a gradual transition between the semicircular and the bilobated epigyne, and whether males of both forms exhibit good diagnostic characters. For the time being *A. pulchella* is listed for the Laotian fauna, although *A. versicolor* would be the older name and valid in the case of a synonymisation.

*Caerostris sumatrana* Strand 1915

**Material examined.** 1 female (SMF 58684), L18, vegetation, rocks and soil close to small stream, P. Jäger, M. Sandner & F. Steinmetz leg. 14.III.2007.

The median septum of the present female is narrower

than illustrated by Jäger (2007).

*Cyrtophora citricola* (Forskål 1775)

**Material examined.** 1 female (SMF 58685), L59, in trees in village, by day, by hand, 24.III.2007. 1 female, 1 juvenile (SMF 58738), L15, in village, at houses, by hand, P. Jäger leg. 23.II.2008.

*Cyrtophora unicolor* (Doleschall 1857)

**Material examined.** 3 juveniles (SMF 58686), L10, disturbed forest, vegetation, by day, by hand, P. Jäger leg. 25.III.2007. 1 subadult female (SMF 58687), L 53, in vegetation, P. Jäger leg. 23.III.2007.

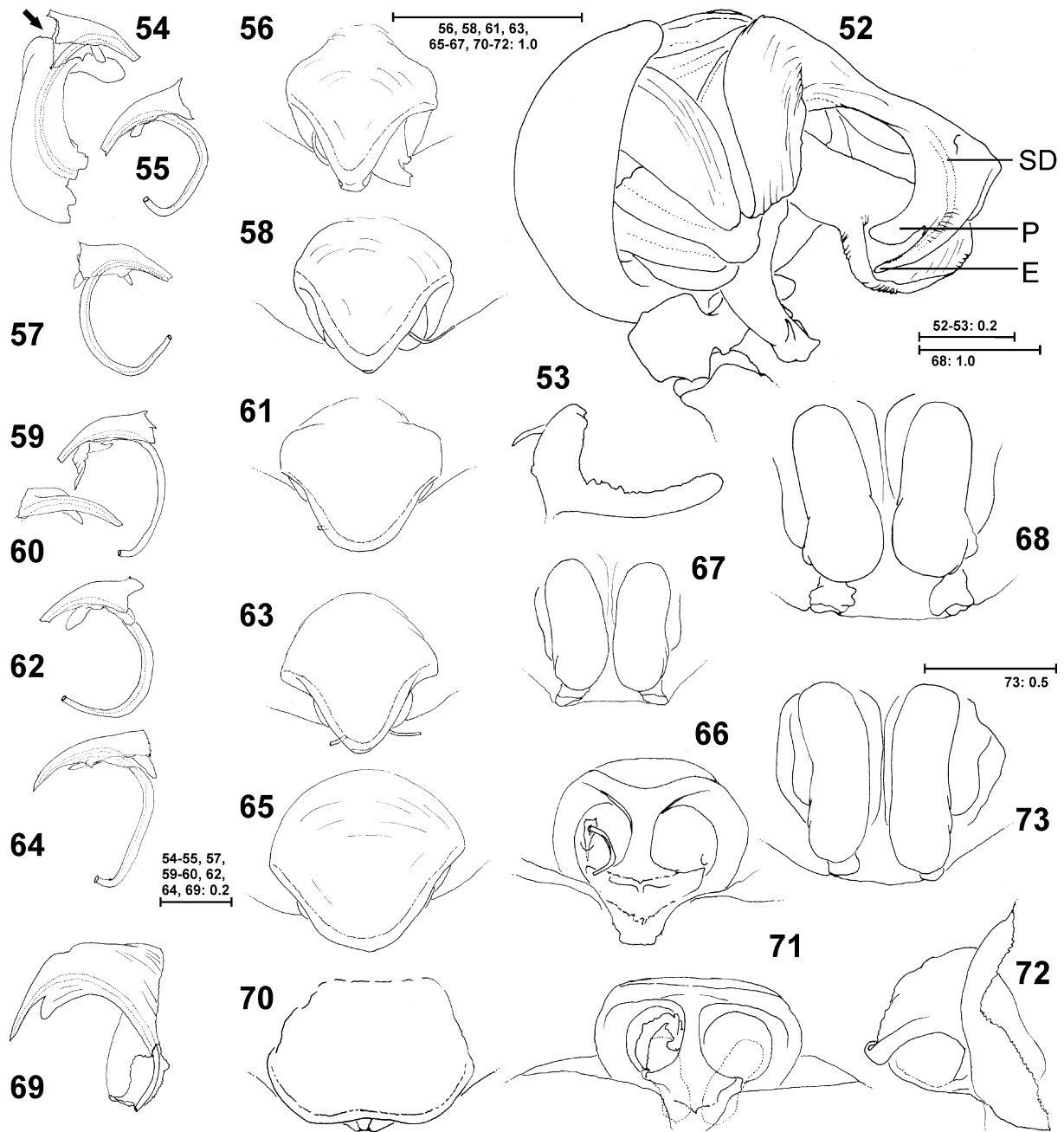
*Eriovixia pseudocentrodes* (Bösenberg & Strand 1906)

Figs. 78–79

**Material examined.** 1 female (SMF 58749), L7, in front of limestone cave, by hand, P. Jäger & F. Steinmetz leg. 18.III.2007. **First record for Laos.**

**Material examined for comparison.** Juvenile holotype (SMF 3333), Japan, Kompira, Saga, W. Dönitz leg. 1883, Strand det. (sub *Aranea pseudo-centrodes*).

The present female represents the first record for this species from Laos. Opisthosoma shape corresponds with that of the juvenile holotype. The epigyne showed a slight



**Figs. 52–72.** *Argiope pulchella* Thorell 1881 from Laos; 52–53, male (SMF 56367) from Tham Sieng Mang (L9); 54–58, two females (SMF 56350) from Luang Nam Tha (L5); 59–61, female (SMF 56383) from Vang Vieng (L23); 62–63, female (SMF 56384) from Tham Pou Kham (L20); 64–67, female (SMF 56325) from Ban Thathot (L29); 68, female (SMF 56329) from Tham En (L33); *Argiope ?versicolor* (Doleschall 1859) from Sipora (Indonesia: Sumatra) (SMF 9901142). — 52, left male palp, prolateral view; 53, male median apophysis, proximal view; 54–55, 57, 59–60, 62, 64, 69, broken-off emboli from epigynes, prolateral view; 56, 58, 61, 63, 65, 70, epigynes (partly with broken-off emboli), ventral view; 66, 71, epigyne, posterior view; 67–68, 73, vulva, dorsal view; 72, epigyne lateral view. E: embolus, P: pendant, SD: sperm duct. Arrow pointing to embolar crack; see text for explanation.

variation in comparison to illustrations by Tanikawa (1999), apparently parts of the scape can break off (here only the right tip: Fig. 78). According to Tanikawa (1999: figs. 5–8) the shape of epigyne is variable. Body size (PL 1.3, OL 3.4) fits in the range given by Tanikawa (1999).

*Gasteracantha hasselti* C.L. Koch 1837

**Material examined.** 1 female (SMF 58691), L10, by hand, P. Jäger leg. 25.III.2007.

*Gasteracantha kuhli* C.L. Koch 1837

Figs. 75–77

**Material examined.** 2 females (SMF 58692), L10, by hand,



P. Jäger leg. 25.III.2007. 1 female (SMF 59739), L24, city centre, in tree, by hand, P. Jäger leg. 10.-12.III.2008.

The female from Vientiane showed a different colour pattern than the female shown in Koh (1989: 33). Lateral and posterior black patches in the female from Singapore (Koh 1989) are dispersed into smaller black spots in the Laotian specimen (Fig. 75).

*Gasteracantha sturi* (Doleschall 1857)

**Material examined.** 1 female (SMF 58693), L7, in front of limestone cave, in vegetation, by hand, P. Jäger & F. Steinmetz leg. 16-17.III.2007.

*Macracantha arcuata* (Fabricius 1793)

**Material examined.** 1 female (SMF 58690), L7, in front of limestone cave, at rocks, by hand, P. Jäger & F. Steinmetz leg. 16-17.III.2007.

*Parawixia dehaani* (Doleschall 1859)

**Material examined.** 1 subadult female (SMF 58740), L54, vegetation, by night, by hand, P. Jäger leg. 1.III.2008. 1 female (SMF 58689), L31, P. Jäger & F. Steinmetz leg. 11.III.2007. 1 subadult female (SMF 58688), L60, P. Jäger leg. 24.III.2007.

The adult female represents a colour variant of this species. The bright transversal line on the anterior dorsal opisthosoma is absent. Instead, distinct white patches and spots are present. Shape of opisthosomal tubercles and

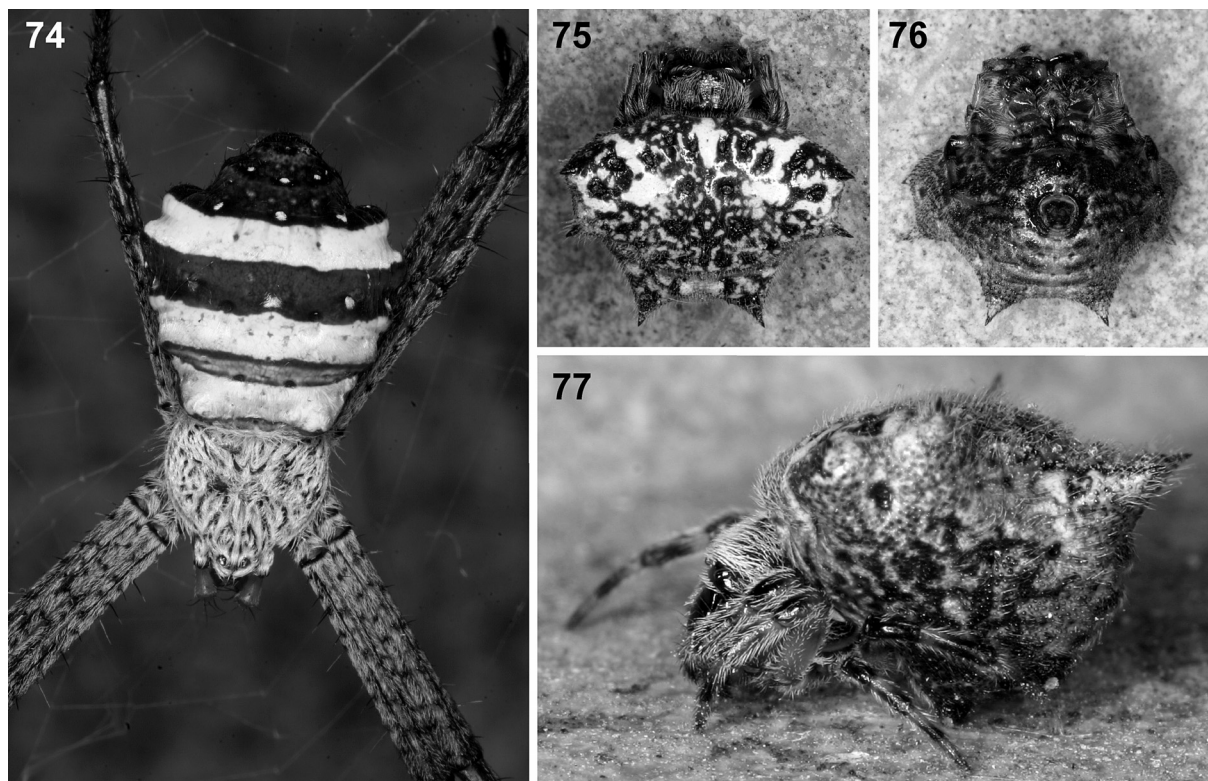
scapus of epigynum are good characters to identify the species. Khandal & Bastawade (2008) show additional variation of colour pattern in this species.

Pisauridae Simon 1890

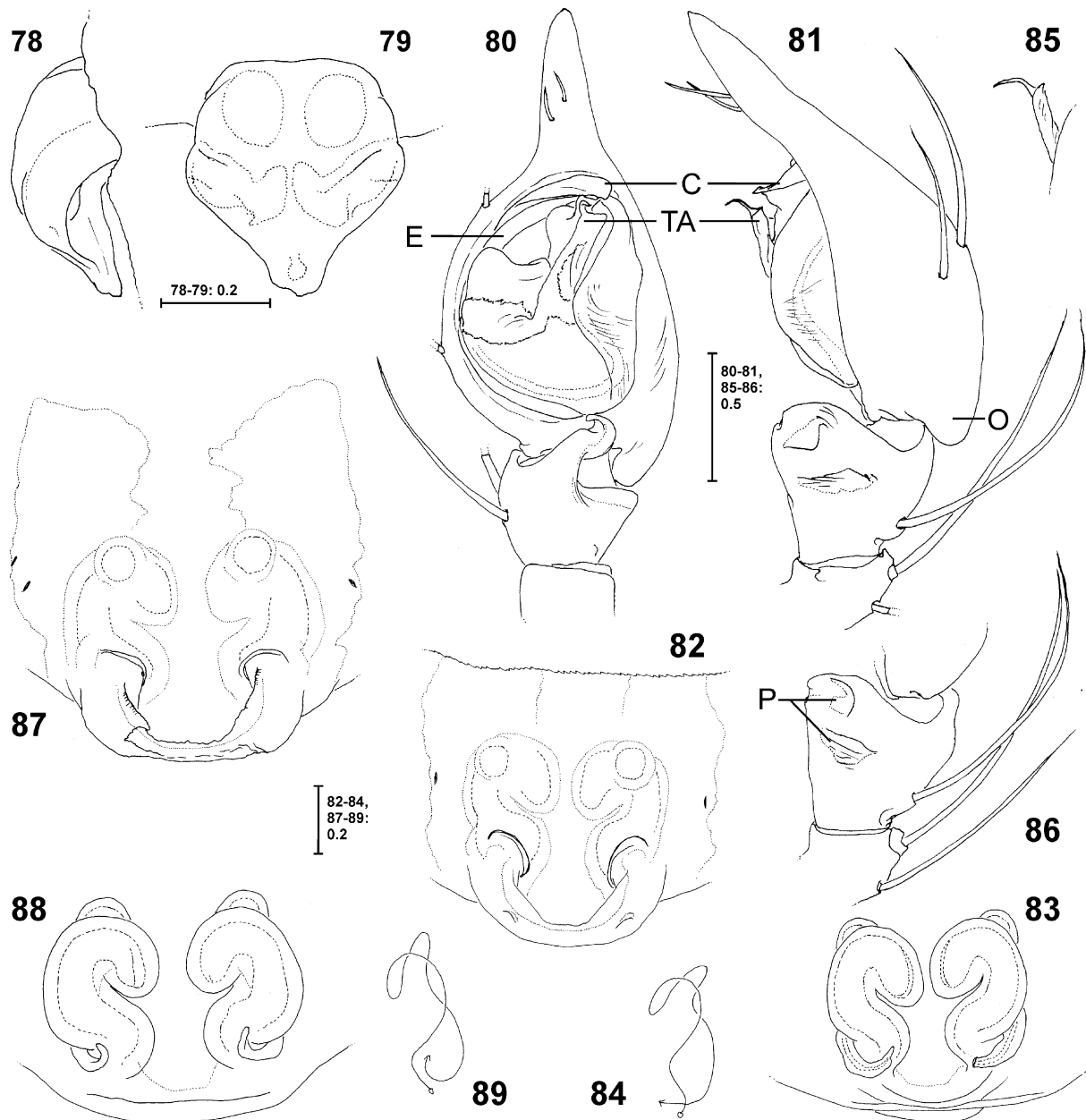
*Eurychoera banna* Zhang, Zhu & Song 2004

**Material examined.** 1 female (SMF 58733), L6, by sweep-net, P. Jäger & V. Vedel leg. 9.XI.2004. 1 male, 2 females, 1 subadult female, 1 juvenile (SMF 58734), L15, by hand, P. Jäger leg. 22.III.2007. 1 female, 4 juveniles, 1 eggsac (SMF 58736), L15, along stream, by hand, by night, P. Jäger leg. 23.II.2008. 1 juvenile (SMF 58737), L15, along stream, by hand, P. Jäger leg. 25.II.2008. 1 subadult female (SMF 58735), L20, in front of limestone cave, resurgence of cave stream, in vegetation over stream, between rocks, by hand, P. Jäger & F. Steinmetz leg. 13.III.2007.

**Biology.** Four webs of *E. banna* were analysed in respect of cohabiting animals. All four webs were located close to a stream or a tributary rill and were built in branches of small trees or shrubs (Fig. 3) in heights of 50 cm to 180 cm over the ground. One web was one meter away from the stream, all others were built over the water surface. The male was found together with a juvenile in one web, both of the same body length. In all four cases leaves were included in the web. The vast majority of specimens were located at these leaves. Collections were done between 12.30 and 14.00 o'clock. In the following list identifications are



**Figs. 74–77.** *Argiope pulchella* Thorell 1881; 74, female (SMF 58681) from Ban Phoxay (L18); *Gasteracantha kuhli* C. L. Koch 1837; 75–77, female (SMF 59739) from Vientiane (L24). — 74–75, dorsal; 76, ventral habitus; 77, lateral habitus.



**Figs. 78–89.** *Eriovixia pseudocentrodes* (Bösenberg & Strand 1906); 78–79, female from Nong Khiao (L7); *Oxyopes birmanicus* Thorell 1887; 80–81, male from Vang Vieng (L22); 82–84, female from Ban Thatot (L29); 85–89, male and female syntypes from Burma, Bhamo. — 78–79, 82, 87, epigyne (78, lateral view; 79, 82, 87, ventral view); 80–81, left male palp (80, ventral view; 81, retrolateral view); 83, 88, vulva, dorsal view; 84, 89, schematic course of internal duct system, dorsal view; 85, tegular apophysis, retrolateral view; 86, male palpal tibia, retrolateral view. C: conductor, E: embolus, O: outgrowth of basal cymbium, P: tibial pockets, TA: tegular apophysis.

given, which were partly provided by specialists (with numbers of individuals behind species): Araneae (Salticidae sp.: 1, Thomisidae sp.: 3, Theridiosomatidae sp.: 2, Theridiidae, Argirodes sp.: 23, Pholcidae sp. A: 1, sp. B: 1, Uloboridae sp.: 4, Clubionidae sp.: 1); Insecta (Coleoptera, various species: numerous specimens; Dermaptera sp.: 1; Diptera sp.: 2; Psocoptera sp. div.: 16; Hymenoptera, ?Diapriidae sp.: 1; Insecta sp.: 1; Thysanoptera, Phlaeothripidae, *Elaphrothrips ?malayensis* Bagnall: 1; Phlaeothripinae sp. A: 4; Heteroptera sp.: 4). Body length of web-owning spiders

was 4.6–9.5 mm, that of cohabiting spiders 0.85–4.5 mm, and that of insects 1.3–6.0 mm.

Young *Eurychoera* spiders attached their web apparently to the surface of leaves, in opposite to the free sheet-web of subadult and adult spiders. In two leaves with a hole Thomisidae were observed using the holes as an escape. In one eggsac of *E. banna* 106 eggs were found with embryos before reversion. Epigynes of *E. banna* are regularly plugged with broken emboli (three females were observed with two emboli, one with one embolus). One male had

only one palp left, the other was missing.

Some observations on *E. quadrimaculata* of Joseph Koh (in litt.) are included here for comparison purpose: He observed one male without palps (“eunuch”), without having seen how the palps have been removed. The male was walking on the web. The female in the same web was hanging under the sheet. All these observations were made in Brunei, which at the same time is the first evidence of occurrence in this country.

#### Oxyopidae Thorell 1870

##### *Oxyopes birmanicus* Thorell 1887

Figs. 80–89

**Material examined.** 2 males (SMF 58731), L22, riverbanks, vegetation, at night, by hand, P. Jäger & F. Steinmetz leg. 12–13.III.2007. 1 female (SMF 58730), L29, Ban Thathot, in front of Tham Thathot, P. Jäger & F. Steinmetz leg. 10.III.2007.

**Additional material examined for comparison.** 1 male (NHRS Stockholm Coll. Thorell 1575a), syntype of *O. birmanicus*, Birma: Bhamò, Doria ded. 17 males, 19 females (NHRS Stockholm Coll. Thorell 1575b), most likely no syntypes of *O. birmanicus*, Birma: Tharrawaddy, Oates ded. [1 additional female not conspecific!]. 2 males, 3 females (NHRS Stockholm Coll. Thorell 1575c), syntypes of *O. birmanicus*, Birma: Bhamò, Doria (Mus[eo]. Civ[ico]. Gen[ova].) ded. 3 females (NHRS Stockholm Coll. Thorell 1575d), syntypes of *O. birmanicus*, Birma: Schwego-myo [= Shwebo, Sagaing State or ? = Shwemyo, N Pyinmana, Mandalay State], Doria ded. 1 male, 1 female (NHRS Stockholm Coll. Thorell 1575e), most likely no syntypes of *O. birmanicus*, Indonesia [Sumatra], Nias, Doria ded. 11 females, 9 juveniles (SMF 9901104), Siberut bei Sumatra, Coll. Roewer 1928, Reimoser det. [1 additional male not conspecific!], RII 1104/2.

**Note.** Only those specimens collected in one of the two localities mentioned in the original description (Thorell 1887: 329, Bhamò, Shwego-myo) are considered syntypes of *Oxyopes birmanicus*. Other material was probably added later to the series no. 1575 of the “Collectio Thorell”. Additional syntypes may be deposited in the Museo Civico di Storia Naturale Genova (not traced).

**Extended diagnosis.** Males of this species may be recognised by the tegular apophysis of the male palp having a thin and bent process and by having two retrolateral pockets at the palpal tibia. Females having a broad U-shaped posterior chitinous wall and two spherical structures of the internal duct system, shining through the cuticle of the epigynum.

**Measurements** (syntypes, material from Laos and Sumatra). Males: PL 2.9–3.9, PW 2.4–3.1, OL 3.6–4.8, OW 1.2–1.6. Females: PL 2.8–4.6, PW 2.2–3.4, OL 4.5–9.3, OW 1.6–4.1.

**Variation.** Males of the species from Myanmar (= Burma) show uniquely the same type of the two retrolateral palpal

tibial pockets (Fig. 86: P). Males from Laos and Sumatra (Nias) had another conformation (Figs. 80–81). Moreover the basal retrolateral cymbium had an distinct outgrowth (Fig. 81: O), which was missing in the Burmese specimens (Fig. 86). Other characters, such as conformation of embolus, conductor or tegular apophysis varied only slightly and without any geographic pattern. The same is true for the palpal spines. In females the shape of the sclerotised wall of the posterior epigyne (in several specimens the margin was broken as shown in Fig. 87) and the distance of the spherical structures of the internal duct system varied (Figs. 82, 87). As general congruence between the specimens from Laos and the syntypes is given those are considered conspecific and differences intraspecific variation.

#### Agelenidae C. L. Koch 1837

##### *Agelena limbata* Thorell 1897

**Material examined.** 1 male (SMF 58732), L10, by hand, 2 metres above ground, web in vegetation, P. Jäger leg. 25.III.2007, as subadult, adult: 28.V.2007, SD 437. **First record for Laos.**

**Biology.** Webs of *Agelena* specimens were situated always distinctly above the ground, mostly attached to branches of shrubs or trees. Similar webs are made by *Hippasa* spp. (Lycosidae), but webs of the latter species are in every case connected to the soil, even if the sheet web is situated above the ground and attached to the vegetation. *Agelena limbata* was known from Myanmar, China, Japan and Korea, so far (Platnick 2009). The male represents the first record for Laos.

#### Amaurobiidae Thorell 1870

##### Coelotinae F.O. Pickard-Cambridge 1893

This subfamily was firstly recorded for Laos by Wang & Jäger (2008). They described the following new species from Luang Nam Tha Province: *Draconarius bounnami* Wang & Jäger 2008 (L4), *D. latidens* Wang & Jäger 2008 (L2), *D. postremus* Wang & Jäger 2008 (L2), *D. songi* Wang & Jäger 2008 (L3), and *D. tabularis* Wang & Jäger 2008 (L6). Wang et al. (2008) described another species, *Notiocoelotes laosensis* Wang, Xu & Li 2008 from Khammouan Province (L28). Further specimens of Coelotinae are under examination.

#### Sparassidae Bertkau 1872

##### *Heteropoda* Latreille 1806

This large genus is still under revision. Jäger (2008) described 25 new species from SE Asia and New Guinea, among them species from southern China, Vietnam and Thailand. Bayer (2008) and Bayer & Jäger (2009) revised the cave-dwelling species in Laos and described two new species and recorded one species new to Laos: *Heteropoda aemulans* Bayer & Jäger 2009, *H. steineri* Bayer & Jäger 2009, *H. simplex* Jäger & Ono 2000.



*Heteropoda dagmarae* Jäger & Vedel 2005

**Material examined.** 1 male (SMF 40861), L7, in front of limestone cave, banana plantation, on the ground between leaves, by hand, P. Jäger & F. Steinmetz leg. 16-17.III.2007, PJ 2729. 1 female (SMF 40833), L7, outside cave, banana plantation, trees, bushes, by night, by hand, P. Jäger leg. 29.II.2008, PJ 3021.

*Heteropoda maxima* Jäger 2001

This species was treated together with three further Laotian *Heteropoda* species from caves (see above) in a thorough analysis by Bayer (2008), results with new records were published by Bayer & Jäger (2009). *H. maxima* was firstly introduced by pet dealers into Germany in January 2008. Intensive collecting of adult individuals, especially females with egg-sacs, in cave habitats may cause a distinct negative effect on the population size. Therefore further activities in this respect and their impact on natural populations should be observed and it should be considered whether the species must be listed on the Appendix III of the Washington species conservation issue.

*Heteropoda tetrica* Thorell 1897

**Material examined.** 1 subadult male (SMF 40847), L3, by hand, P. Jäger & V. Vedel leg. 4.XI.2004, PJ 3026, SD 157. 1 female (SMF 40853), L7, outside cave, by hand, F. Steinmetz leg. 10.III.2007, PJ 3095. 1 female (NHM), L7, outside cave, sieving leaf litter, F. Steinmetz leg. 17-18.III.2007. 1 female (NHMW), L7, outside cave, sieving leaf litter, P. Jäger & F. Steinmetz leg. 18.III.2007, PJ 3094. 1 female (MHNG), L7, outside cave, by hand, F. Steinmetz leg. 23.III.2007. 1 male (MHNG), L7, outside cave, close to stream, by hand, F. Steinmetz leg. 25.III.2007. 1 male (NHM), L7, outside cave, by hand, F. Steinmetz leg. 27.III.2007. 1 male (MHNG), L7, outside cave, close to stream, by hand, F. Steinmetz leg. 27.III.2007. 1 male (ZMB), L7, outside cave, close to stream, by hand, F. Steinmetz leg. 29.III.2007, PJ 3092. 1 female (SMF 40832), L7, outside cave, by night, by hand, P. Jäger leg. 29.II.2008, PJ 3020. 1 male, 1 female (SMF 40834), L60, vegetation along stream, by night, by hand, P. Jäger leg. 23.III.2007, PJ 2559, 2560. 1 female (SMF 40837), L15, by night, by hand, P. Jäger leg. 22.III.2007, PJ 2562. 1 male (SMF 40831), L15, by night, by hand, P. Jäger leg. 23.II.2008, PJ 3022. 1 male (SMF 40860), L15, at waterfall, on rock surface, by night, by hand, P. Jäger leg. 25.II.2008, PJ 3093, SD 552, S. Bayer det. 1 female (SMF 40835), L64, along stream, leaf litter, stones, by day, by hand, P. Jäger leg. 21.III.2007, PJ 2561. 1 male, 5 females (SMF 40829), L64, by night, by hand, P. Jäger leg. 21.III.2007, PJ 2552, 2553-2557. 2 females (SMF 40851), L18, by day and night, by hand, P. Jäger, M. Sandner & F. Steinmetz leg. 14.III.2007, PJ 3031-3032. 1 female (SMF 40848), L19, outside cave, by hand, P. Jäger & F. Steinmetz leg. 14.III.2007, PJ 2558. 1 female (SMF 40830), L20, in cave, by hand, P. Jäger & F.

Steinmetz leg. 13.III.2007, PJ 3024, SD 430. 1 subadult male (SMF 40850), L21, by night, by hand, P. Jäger & V. Vedel leg. 19.XI.2004, PJ 3027. 1 female (SMF 40849), L23, by hand, P. Jäger & F. Steinmetz leg. 13.III.2007, PJ 3023.

**Taxonomy.** Eusemann (2006) and Eusemann & Jäger (2009) performed an analysis of intraspecific variation of this widespread species. One present female (PJ 3023) exhibited a well visible median septum of epigyne, i.e. the lateral lobes were not touching each other. The internal duct system was in accordance with diagnostic features and within intraspecific variation.

**Biology.** Spiders came out of their hideouts (i.e. soil crevices, leaf litter, eroded tree roots, between bamboo stalks, etc.) at Houay Kho (L60) at 6-6.30 p.m. at sunset ready for ambushing during the night.

*Heteropoda venatoria* (Linnaeus 1767)

**Material examined.** 1 female (SMF 40854), L7, inside cave, by night, by hand, P. Jäger & J. Altmann leg. 11.III.2006, PJ 2467, SD523. 1 female (SMF 40855), L7, outside cave, by night, by hand, P. Jäger & J. Altmann leg. 11.III.2006, PJ 2563, SD 513. 1 female (SMF 40856), L7, outside cave, by night, by hand, P. Jäger & F. Steinmetz leg. 18.III.2007, PJ 2758. 1 male (SMF 40862), L7, outside cave, by night, by hand, F. Steinmetz leg. 23.III.2007, PJ 2757. 1 female (SMF 40857), L7, in guesthouse, by night, by hand, P. Jäger & F. Steinmetz leg. 20.III.2007, PJ 2754. 1 female (SMF 40836), L64, along stream, vegetation, leaf litter, stones, by night, by hand, P. Jäger leg. 21.III.2007, PJ 2551. 1 subadult female (SMF 40846), L29, by hand, P. Jäger leg. 25.II.2003, PJ 3030. 1 female (SMF 40858), L29, Tham Thatot, inside cave, by night, by hand, P. Jäger & F. Steinmetz leg. 10.III.2007, PJ 2564. 1 female (SMF 40859), L29, same data as for previous specimen, PJ 3096.

The subadult female (SMF 40858) exhibits an epigyne under the cuticle. Ducts in the posterior part of the internal duct system were not as fused as in adult females, i.e. did not exhibit a smooth surface as known from adult specimens. This is yet another example of evidence that internal ducts of *Heteropoda* females fuse secondarily to globular structures with a smooth surface (cf. *Heteropoda homstu* in Jäger 2008: figs. 267-275).

*Pseudopoda namkhan* Jäger, Pathoumthong & Vedel 2006

**Material examined.** 1 subadult female (SMF 40838), L15, by night, by hand, P. Jäger & J. Altmann leg. 7.III.2006, PJ 3025.

This inadult specimen could be reliably identified by its size, its colouration and the occurrence in habitats of the type locality.

*Pseudopoda wang* sp. n.

Figs. 90-101

**Type material.** Holotype male (SMF 58897), Laos, Luang Prabang Province, SE Luang Prabang, Xieng Ngeun

District, Nam Khan, N Ban Keng Koung, L63, N 19°39' 35.61", E 102°18'53.51", ca. 700 m altitude, deep valley with primary and secondary forest, dry stream bed, sieving leaf litter, by day, P. Jäger leg. 24.II.2008, PJ 3100, SD 558. Paratypes. 2 females (SMF 58898), L63, same data as for holotype except for: ca. 1000 m altitude, Winkler apparatus, P. Jäger leg. 21-23.II.2008, PJ 3101-3102.

**Additional material examined.** 1 subadult female (SMF 58899), L63, same data as for paratypes, PJ 3103.

**Etymology.** The Lao word "wǎng" means "to hope", expressing the authors' hope for stopping destruction of natural habitats (deforestation) in Laos; term in apposition.

**Diagnosis.** Small Heteropodinae (total length males 6.1, females 7.1-9.0), most likely belonging to the *diversipunctata*-group according to diagnosis in Jäger (2001, p. 25) except for direction of first winding of female internal duct system, which is not laterad, but posteriorad (cf. Jäger 2001, figs. 82a-b). Distinguished from all other representatives of this group by the tegulum extending distally distinctly beyond the embolus tip (Fig. 91), by the shape of the embolus (Fig. 90) and by the trifurcate RTA (Figs. 91-93). Internal duct system of females similar to that of *P. heteropodoides* Jäger 2001 (known only from female sex), but distinguishable by the smaller oval lateral lobes not touching each other (Fig. 94), the smaller apical part of the internal duct system and narrower fertilisation ducts (Fig. 95).

**Description.** Male. PL 3.3, PW 2.7, AW 1.6, OL 3.1, OW 1.9. Eye diameters and interdistances: AME 0.17, ALE 0.31, PME 0.23, PLE 0.30, AME-AME 0.11, AME-ALE 0.04, PME-PME 0.20, PME-PLE 0.26, AME-PME 0.27, ALE-PLE 0.25, clypeus AME 0.35, clypeus ALE 0.26. Palp and leg measurements: palp 4.2 (1.2, 0.7, 0.8, -, 1.5), I 12.6 (3.3, 1.5, 3.5, 3.1, 1.2), II 14.0 (3.9, 1.5, 3.9, 3.4, 1.3), III 11.3 (3.3, 1.2, 3.0, 2.7, 1.1), IV 12.4 (3.6, 1.0, 3.2, 3.3, 1.3). Leg formula 2143. Spination of palp and legs: palp 131, 100, 2101, 0020; femora I-III 323, IV 331; patellae 001; tibiae I-III 2026, IV 2126; metatarsi I 2014, II-III 2024, IV 3036. Metatarsus IV with ventral distal spine and few distal bristles. Chelicera with 3 anterior, 4 posterior teeth, and ca. 30 denticles in an elongated field.

Palpus as in diagnosis. Embolus arising in a 10.30-o'clock-position from tegulum, conductor in an 11.30-o'clock-position. Inner branch of dorsal RTA slightly bifurcate (Figs. 91, 93), ridge of external branch of dorsal RTA running to tip of ventral RTA (Fig. 92).

Colouration. Yellow brown with reddish-brown markings. Prosoma with striae and additional irregular pattern; submarginally with indistinct bright band, medially brighter. Sternum and ventral coxae bright pale yellow; labium and gnathocoxae light reddish-brown. Chelicerae with longitudinal bands. Legs with spine patches and additional spots, especially on ventral femora. Dorsal opisthosoma reddish-brown with anterior half brighter and muscle sigilla distinctly marked with dark rings; lateral opisthosoma with irregular pattern of larger spots; ventral opisthosoma with median part faint reddish-brown and with dark triangle in

front of spinnerets (Figs. 98-99).

Female. PL 3.3-3.5, PW 3.0-3.2, AW 1.8-1.9, OL 3.8-4.5, OW 2.8-3.0. Eye diameters and interdistances: AME 0.16-0.18, ALE 0.31, PME 0.22-0.24, PLE 0.31, AME-AME 0.13-0.14, AME-ALE 0.05-0.06, PME-PME 0.25, PME-PLE 0.28-0.31, AME-PME 0.33-0.37, ALE-PLE 0.30-0.33, clypeus AME 0.32-0.36, clypeus ALE 0.25-0.27. Palp and leg measurements of female paratype (PJ 3102): palp 4.5 (1.3, 0.7, 1.1, -, 1.4), I 11.1 (3.1, 1.4, 2.9, 2.6, 1.1), II 12.1 (3.5, 1.5, 3.3, 2.6, 1.2), III 10.0 (3.0, 1.1, 2.6, 2.3, 1.0), IV 11.3 (3.5, 1.1, 2.7, 2.9, 1.1). Leg formula 2413. Spination of palp and legs: palp 131, 101, 2121, 1013; femora I 323, II 322(3), III 322, IV 331; patellae 001; tibiae I-III 2026, IV 2126; metatarsi I 2(1)014, II 202(1)4, III 3(2)024, IV 3036. Metatarsus III with ventral distal spine and distal scopula, metatarsus IV with ventral distal spine and few distal bristles. Chelicera with 3 anterior, 4 posterior teeth, and 23-26 denticles in elongated patch; palpal claw with 6 teeth.

Female copulatory organ as in diagnosis. Epigynal field wider than long, with tiny anterior bands. Slit sense organs within epigynal field. Anterior epigyne with median longitudinal bar, lateral lobes distinctly separated from each other. Posterior part with wide membranous median part (Fig. 94). Glandular pores situated posteriorly at the first winding, fertilisation ducts long (Fig. 95). Pre-epigyne of subadult female (PJ 3101) with broad median septum (Fig. 97).

Colouration. Generally as in male, but one paratype with bright slightly undulated transversal line in posterior half of dorsal opisthosoma (Figs. 100-101).

**Distribution.** Known only from the type locality.

*Olios muang* sp. n.

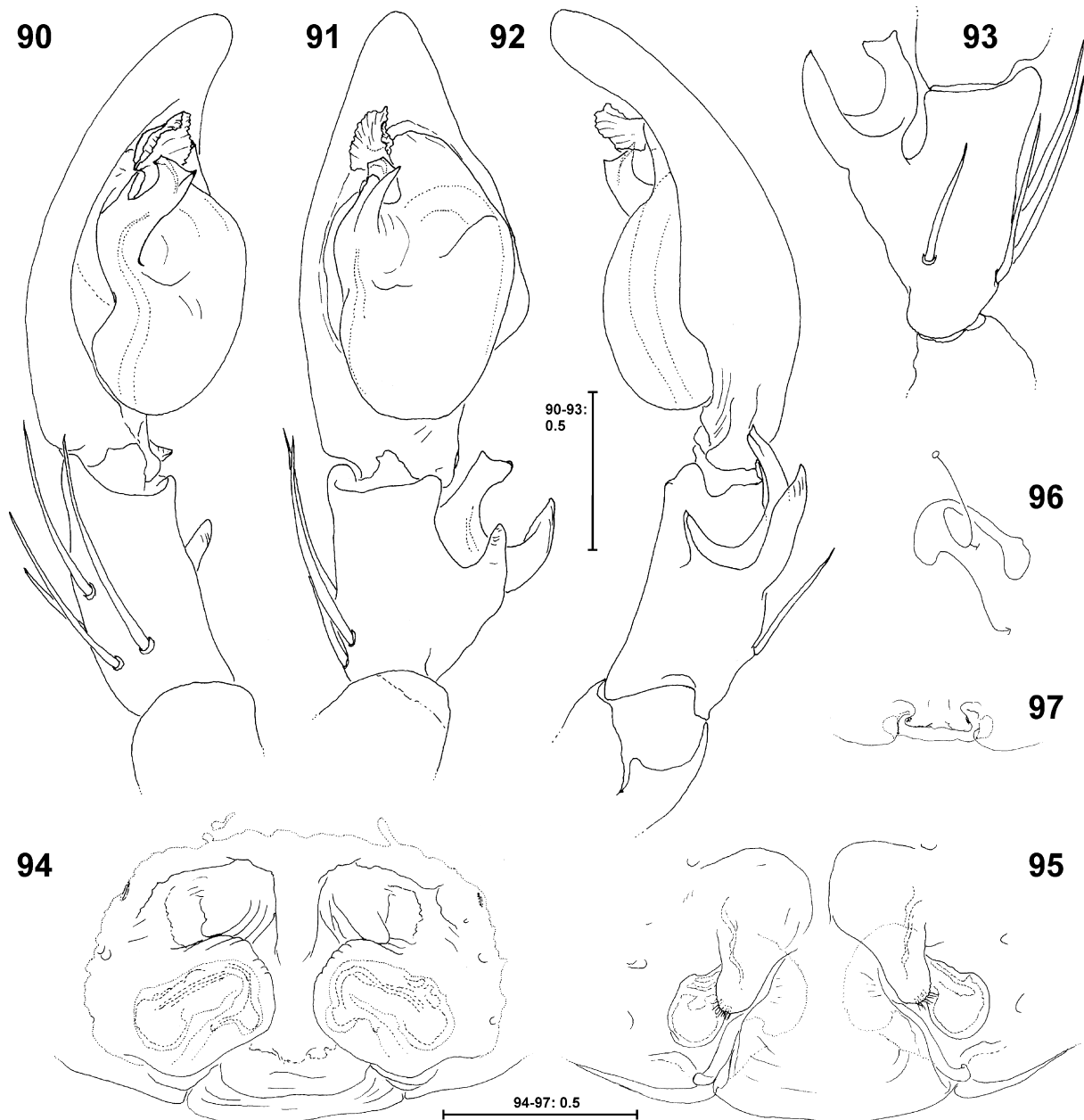
Figs. 102-105

**Type material.** Holotype male (SMF 58900), Laos, Khammouan Province, Ban Thathot, L29, N 17°37.471', E 105°08.797', 180 m altitude, village, on mango tree, in foliage, by night, by hand, P. Jäger leg. 18.II.2003, PJ 3106.

**Etymology.** The Lao word "muang" means "mango", referring to the type locality, the mango tree in Ban Thathot, where the holotype male was collected; term in apposition.

**Diagnosis.** Small Sparassinae (total length male 9.2). Distinguished from other *Olios* spp. by the shape of the embolus (Figs. 102-104), and especially by the embolus tip (ET) being slender and only slightly curved, and by the arising point of embolus tip with embolic apophysis (EA) (Fig. 105); tegulum in contrast to many other *Olios* spp. with only small and inconspicuous apophysis.

**Description.** Male. PL 4.2, PW 4.4, AW 2.3, OL 5.0, OW 3.5. Eye diameters and interdistances: AME 0.35, ALE 0.30, PME 0.27, PLE 0.27, AME-AME 0.20, AME-ALE 0.12, PME-PME 0.36, PME-PLE 0.39, AME-PME 0.27, ALE-PLE 0.15, clypeus AME 0.17, clypeus ALE 0.18. Palp and leg measurements: palp 5.9 (1.7, 0.7, 1.0, -, 2.5), I 24.6 (6.7, 2.6, 6.9, 6.5, 1.9), II 26.3 (6.7, 2.7, 6.9, 6.5, 1.9), III 18.5 (5.6, 1.9, 5.0, 4.6, 1.4), IV 20.6 (6.2, 1.8, 5.3, 5.7, 1.6).



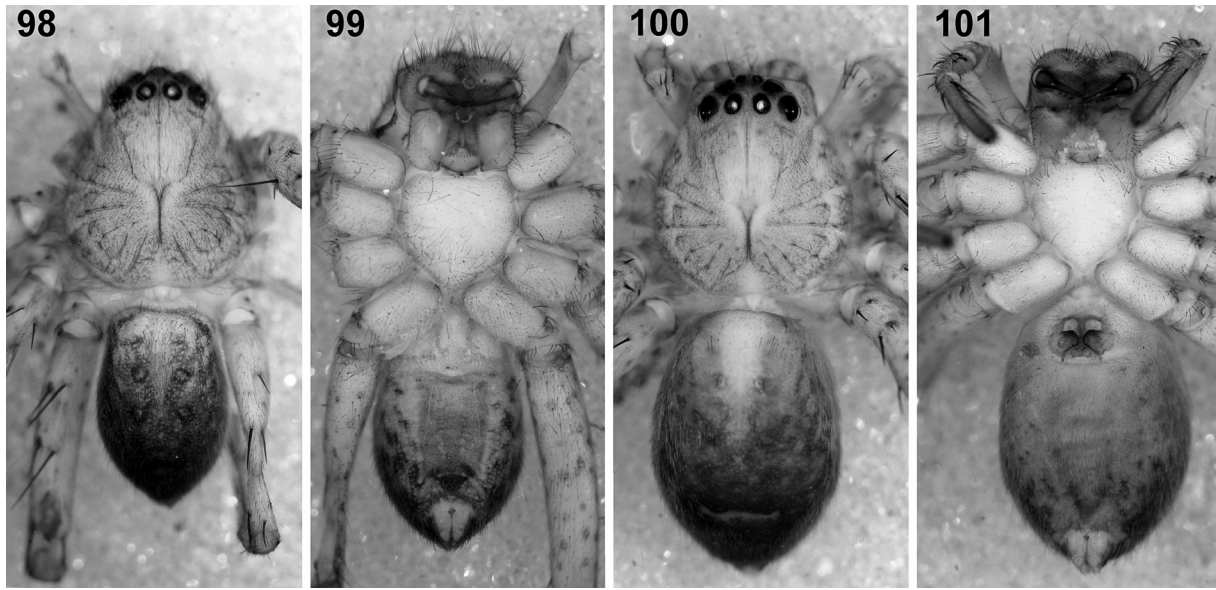
**Figs. 90–97.** *Pseudopoda wang* sp. nov. from Ban Keng Koung (L63), male holotype (90–93), female paratype (94–96), subadult female (97). — 90–93, left male palp (90 prolateral view, 91 ventral view, 92 retrolateral view, 93 dorsal); 94, epigyne, ventral view; 95, vulva, dorsal view; 96, schematic course of internal duct system, dorsal view; 97, pre-epigyne, ventral view.

Leg formula 2143. Spination of palp and legs: palp 131, 001, 0011; femora I–III 323, IV 322; patellae I–II 100, III 1(0)00, IV 100; tibiae I–III 2124, IV 21(0)24; metatarsi I–III 2024, IV 3026. Metatarsus IV distally with small ventral spine, few bristles and scopula. Chelicera with 2 anterior, 5 posterior teeth, and without denticles.

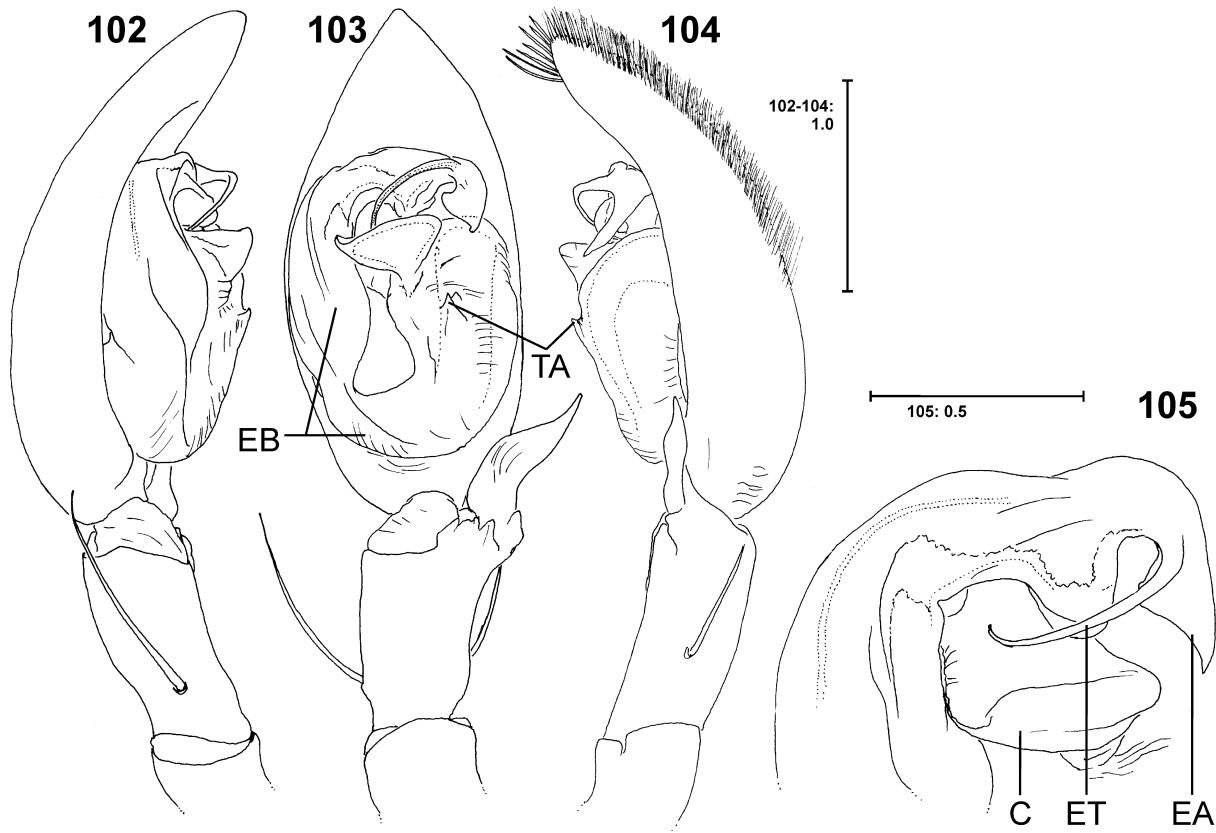
Palpus as in diagnosis. Embolus (EB) arising in a 6.30-o'clock-position from tegulum; conductor (C) roughly triangular in ventral view, arising centrally from tegulum. Tegular apophysis (TA) situated medially in retrolateral half of bulb (Fig. 103). RTA tapered, slightly curved in ventral view (Fig. 103), with small basal humps. Dorsal cymbium

in distal half with scopula and with apical bristle-like hairs. Colouration. Yellow brown with darker markings. Prosoma without pattern, darker at anterior margin. Sternum, ventral coxae, labium and gnathocoxae light yellowish- to reddish-brown. Chelicerae reddish-brown with indistinct longitudinal patches and distal margin dark. Ventral femora with indistinct spots, distal leg segments darker. Dorsal opisthosoma with median row of patches decreasing in size posteriorly and fusing to longitudinal line; lateral opisthosoma with irregular pattern of partly elongate spots; ventral opisthosoma without distinct pattern. Female. Unknown.





**Figs. 98–101.** *Pseudopoda wang* sp. nov. from Ban Keng Koung (L63), male holotype (98–99), female paratype (100–101). — 98, 100, dorsal habitus; 99, 101, ventral habitus.



**Figs. 102–105.** *Olios muang* sp. nov. from Ban Thathot (L29), male holotype, left male palp. — 102, prolateral view; 103, ventral view; 104, retrolateral view; 105, embolus and conductor, ventrodistal view. C: conductor, EA: embolic apophysis, EB: basal part of embolus, ET: embolus tip, TA: tegular apophysis.

**Distribution.** Known only from the type locality.

**Relationships.** There is one undescribed species from Indonesia (Sumatra: Bukittinggi) known to the first author which exhibit similar male copulatory features: embolus at

least at its base swollen and of irregular shape (not all-over filiform as in *O. scalptor* Jäger & Ono 2001 or in *O. milleti* (Pocock 1901)), embolus distal part distinctly bent prolaterad with tip situated close to central conductor (distal

part not rounded as in *O. scalptor* Jäger & Ono 2001 or in *O. milleti* (Pocock 1901)).

*Rhitymna verruca* (Wang 1991)

**Material examined.** 1 female (SMF 40839), L15, plantations around the village, by day, by hand, P. Jäger leg. 26.II.2008, PJ 2813, SD 557.

*Thelcticopis folia* sp. n.

Figs. 106–113

**Type material.** Holotype female (SMF 58901), Laos, Luang Prabang Province, SE Luang Prabang, Xieng Ngeun District, Nam Khan, N Ban Keng Koung, L63, N 19°39' 35.61", E 102°18'53.51", ca. 1000 m altitude, deep valley with primary and secondary forest, dry stream bed, sieving leaf litter, by day, P. Jäger leg. 22.II.2008, PJ 3105.

**Etymology.** The specific epithet is derived from the plural of the Latin noun "folium", meaning "leaves" and referring to the fact that this *Thelcticopis* sp. is the first one recorded from the leaf litter in contrast to other species living in the foliage and on trees; term in apposition.

**Diagnosis.** Median Sparianthinae (total length female 10.9). Distinguished from other species of the genus by the roundish median plate (Fig. 106), and by the shape of the internal duct system (Fig. 107).

**Description.**

Female. PL 4.4, PW 4.1, AW 2.0, OL 6.3, OW 4.2. Eye diameters and interdistances: AME 0.28, ALE 0.20, PME 0.19, PLE 0.24, AME-AME 0.25, AME-ALE 0.22, PME-PME 0.43, PME-PLE 0.37, AME-PME 0.23, ALE-PLE 0.12, clypeus AME 0.20, clypeus ALE 0.25. Palp and leg measurements: palp 4.0 (1.3, 0.8, 0.9, -, 1.0), I 10.8 (3.3, 2.0, 3.0, 1.8, 0.7), II 11.4 (3.6, 2.0, 3.1, 2.0, 0.7), III 10.2 (3.2, 1.6, 2.6, 2.1, 0.7), IV 10.9 (3.2, 1.4, 2.6, 2.8, 0.9). Leg formula 2413. Spination of palp and legs: palp 120, 101, 2221, 1011; femora I 210, II 220, III-IV 120; patellae 000; tibiae I-II 0008, III 0006, IV 0004 (3 prolateral); metatarsi

I-III 0002, IV 1014(2024). Ventral metatarsus IV with 15–20 distal bristles. Ventral femora with prolateral row of bristles, thickness of the latter decreasing from I to IV. Chelicera with 3 anterior and 4 posterior teeth, without denticles; palpal claw with 5 teeth with primary tooth very prominent (Fig. 109). Scale hairs present on prosoma, opisthosoma, and all appendages, dark and bright scale hairs intensify the colour impression; bright scale hairs—in contrast to dark hairs—losing their bright impression observed in live specimen in ethanol (Figs. 111–113). Single scale hairs with 4–10 filiform branches on each side (Fig. 110).

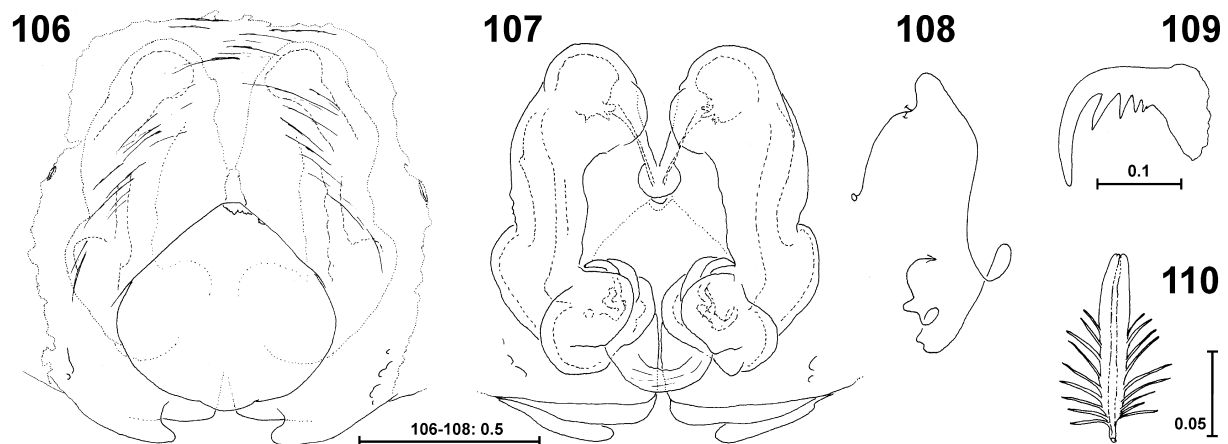
Female copulatory organ as in diagnosis. Epigynal field longer than wide with slit sense organs included marginally. Anterior epigyne with weak striae. Median septum triangular in anterior part and rounded posteriorly with only weak median bulge. Posterior margin with two hooks, each pointing medially (Fig. 106). Initial part of internal duct system narrow, leading to a chamber, the latter with only slightly recognisable glandular pores; ducts running posteriorly wider, curved and coiled in posterior part; fertilisation ducts situated medially, pointing laterally (Fig. 107).

Colouration (in ethanol). Yellowish to reddish brown with dark pattern. Dorsal prosoma and opisthosoma irregularly spotted. Medial femora broadly annulate, patellae with prolateral patches, distal leg segments darker. Sternum, ventral coxae yellowish brown, without distinct pattern. Labium and gnathocoxae reddish brown, each distal gnathocoxae internally with pale yellow patch. Lateral opisthosoma with irregular patches, ventral opisthosoma yellowish brown without distinct pattern, except for some marginal spots.

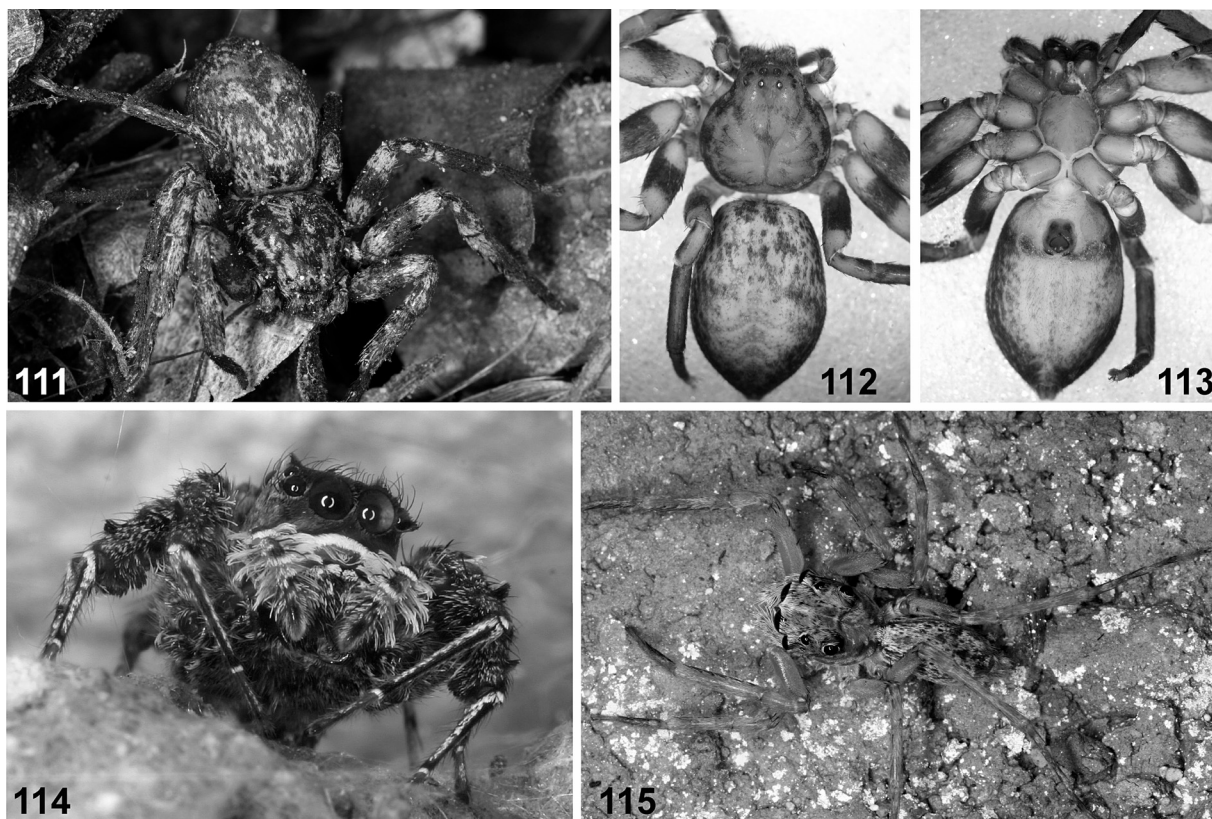
Male. Unknown.

**Distribution.** Known only from the type locality.

**Notes.** Undescribed species with similar copulatory organs are known to the first author from Thailand (Chiang Mai Province: Doi Suthep, Doi Inthanon) and from China (Yunnan Province: Xishuangbanna).



**Figs. 106–110.** *Thelcticopis folia* sp. nov. from Ban Keng Koung (L63), female holotype. — 106, epigyne, ventral view; 107, vulva, dorsal view; 108, schematic course of internal duct system, dorsal view; 109, right palpal claw, prolateral view; 110, scale hair from dorsal opisthosoma.



**Figs. 111–115.** *Thelcticopis folia* sp. nov. from Ban Keng Koung (L63); 111–113, female holotype; *Portia assamensis* Wanless 1978; 114, female from Vang Vieng (L18); *Spartaeus noctivagus* Logunov & Azarkina 2008; 115, female from Vang Vieng (L69). — 111, live habitus, in original habitat; 112, 113, habitus in ethanol; 114, 115, live habitus.

#### Salticidae Blackwall 1841

Material was identified by Dmitri Logunov (Manchester) and Galina Azarkina (Novosibirsk). Some adult specimens could not be identified to species level. They belong to the genera *Evarcha*, *Euophrys* and *Lycidas* and are registered in the Senckenberg collection database (SeSam: online at: <http://sesam.senckenberg.de/>) as well as the following identified material. Three *Spartaeus* spp. were described as new (Logunov & Azarkina 2008): *Spartaeus banthamus* Logunov & Azarkina 2008 (L35), *Spartaeus jaegeri* Logunov & Azarkina 2008 (L6) and *Spartaeus noctivagus* Logunov & Azarkina 2008 (L21).

#### *Harmochirus brachiatus* (Thorell 1877)

**Material examined.** 1 female (SMF 57071), L60, P. Jäger leg. 22.III.2007.

#### *Menemerus bivittatus* (Dufour 1831)

**Material examined.** 1 male (SMF 58672), L 15, along river bank and in village, by hand, by day, P. Jäger leg. 24.II.2008. **First record for Laos.**

#### *Myrmarachne turiformis* Badcock 1918

**Material examined.** 1 male (SMF 58671), L 15, vegetation along stream, by sweepnet, P. Jäger leg. 24.II.2008. **First record for Laos.**

#### *Portia assamensis* Wanless 1978

##### Fig. 114

**Material examined.** 2 females (SMF 58677), L18, Vang Vieng Ban Phoxay, water-duct under street, by day, by hand, P. Jäger leg., 14.III.2008. **First record for Laos.**

One female (Fig. 114) was observed and photographed on the ceiling of a water duct, where webs of *Psecchus* sp., *Orsinome vethi*, *Tylorida ventralis* and Dipluridae gen. sp. were present.

#### *Spartaeus noctivagus* Logunov & Azarkina 2008

##### Fig. 115

**Material examined.** 1 female (SMF 58675), L71, in cave, by hand, P. Jäger leg. 15.III.2008. 2 females (SMF 58676), L69, in cave, by hand, P. Jäger leg. 15.III.2008.

One female (Fig. 115) was recorded and photographed in Tham Pou Na (L69) in the entrance hall, where day light was considerably reduced.

#### *Spartaeus zhangi* Peng & Li 2002

**Material examined.** 1 female (SMF 58668), L39, under bridge, by hand, by day, P. Jäger leg. 6.III.2008. 1 male (SMF 58678), L65, in cave, H. Steiner leg. 11.I.2008. 1 male (SMF 58674), L 15, above waterfall, close to stream, at rock, by hand, P. Jäger leg. 23.II.2008.

This species was also found in L7, L8, and L33



(Logunov & Azarkina 2008).

### Acknowledgments

P. Jäger is grateful to Manivone Thoummabouth, Ouane Sirisack, Kim Valakone, Edina Ificene, Chearmoua Bear Khue ("La Maison du Patrimoine", Heritage House, Luang Prabang) and Anne-Gaelle Verdier (International River and Heritage Institute, Tours) for their various help in the organisation of the field work and for supporting the work within the partnership between the Research Institute Senckenberg and Nam Khan eco-valley prefiguration study (candidate for The UNESCO Man and the biosphere program) hosted at the Heritage House of Luang Prabang. Expeditions of P. Jäger to Laos were partly supported by a donation of family Rhomberg (Germany) through the BIOPAT program, further through help and assistance by Julia Altmann (SMF), Bounnam Pathoumthong (deceased; National University of Laos, Vientiane), Helmut Steiner (Hanau), Markus Auer (Dresden), Sylvia Hofmann (Kiel), Markus Sandner (Dresden), Frederik Steinmetz (Berlin) and Vincent Vedel (Galway). Dmitri Logunov (Manchester), Steffen Bayer (SMF), Jesper Birkedal Schmidt (Copenhagen), Pakawin Dankittipakul (Chiang Mai), Louis Deharveng (Paris), Stefan Foord (Thohoyandou), Wilson Lourenço (Paris), Shuji Okajima (Atsugi), Pavel Stoev (Sofia), Marcus Würmli (Tianjin), Mingsheng Zhu (Baoding), and Richard zur Strassen (SMF) identified species from the material treated in this paper. Joseph Koh (Brunei Darussalam) sent again specimens of *Eurychoera quadrimaculata* and shared his observations on this species in Brunei and Singapore. Shuqiang Li (Beijing) kindly translated the original Chinese description of *Argiope cameloides* in English. Manju Siliwal (Peelamedu, Tamil Nadu) helped with requests for type material in the Zoological Survey of India in Calcutta and sent Indian literature. I thank all persons and institutions for their support.

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*Received February 20, 2009 / Accepted June 6, 2009*